SOIL SURVEY OF

DeKalb County, Tennessee

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Tennessee Agricultural Experiment Station

Issued June 1972

Major fieldwork for this soil survey was done in the period 1964–67. Soil names and descriptions were approved in 1968. Unless otherwise indicated, statements in this publication refer to conditions in the county in 1967. This survey was made cooperatively by the Soil Conservation Service and the Tennessee Agricultural Experiment Station. It is part of the technical assistance furnished to the DeKalb County Soil Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of DeKalb County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information in this publication. This guide lists all the soils of the county in alphabetic order by map symbol. It shows the capability unit and woodland group for each soil. It also shows the page where each kind of soil and each capability unit is described.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the capability units, and from the sections "Woodland" and "Wildlife."

Foresters and others can refer to the section "Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife habitat in the section "Wildlife."

Community planners and others can read about soil properties that affect the choice of homesites, industrial sites, and recreational areas in the section "Town and Country Planning."

Engineers and builders can find, under "Use of the Soils in Engineering," tables that contain estimates of soil properties and information about soil features that affect engineering practices and structures.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in DeKalb County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County."

Cover picture: **An area in the outer part of the Central Basin. Bodine soils are on the wooded ridgetops in the background. Dellrose soils are on the long, cleared slopes. Very rocky Mimosa soils are in the sparsely covered area below Dellrose soils.**

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SOIL SURVEY OF DeKALB COUNTY, TENNESSEE

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE TENNESSEE AGRICULTURAL EXPERIMENT STATION

DeKALB COUNTY, near the center of Tennessee (fig. 1), has a land area of 176,640 acres, or 276 square miles.

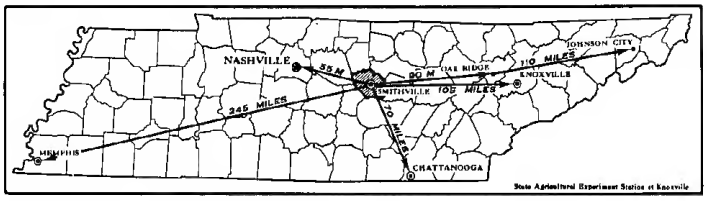

Figure 1.—**Location of DeKalb County in Tennessee.**

The southern and southeastern parts of the county lie within the Highland Rim and range from 900 to 1,150 feet above sea level. This area is made up mostly of undulating and rolling soils that are mainly silt loams or cherty silt loams. The soils respond well to fertilizer and lime and are easy to work; some are poorly drained and respond well to artificial drainage if suitable outlets are available; and many have a fragipan or a dense compact layer at a depth of about 2 feet.

The western and northwestern parts of the county lie mostly in the Central Basin at an elevation of 500 to 900 feet. This area is dominantly hilly to steep and is underlain by limestone bedrock. Most of the soils in the Central Basin are well drained and high in phosphorus. Limestone outcrops occur in many places. The soils on bottom land and terraces are some of the most fertile soils in the county.

General Nature of the County

DeKalb County was established in 1837 from parts of Warren, Cannon, Jackson, and White Counties. It was named for Baron DeKalb, a Bavarian who fought for American independence in the Revolutionary War.

The county was settled about 1795. In 1880, the population was 14,813. By 1960, it had decreased to 10,774. Smithville, the county seat and largest town, had a population of 2,348 in 1960.

Industry in the county has expanded in recent years. Major industries near Smithville include factories, a hosiery mill, and an aircraft plant. Alexandria has a garment factory and a cheese plant, and Liberty has a shirt factory.

According to the U.S. Census of Agriculture, there were 1,235 farms in DeKalb County, in 1964. The average farm was 109 acres. About 71 percent of the farms were operated by owners, but only about 61 percent of the farm operators were classified as full-time farmers.

The largest acreages in the county are used for pasture, hay, corn, small grain, and tobacco. Burley tobacco is the principal cash crop. In 1964 about 910 acres was in tobacco. The total yield was 1,517,814 pounds. Annual lespedeza and tall fescue, the principal hay crops, are used as livestock feed and also sold as cash crops. Horticultural plants are a major source of income.

Livestock farming and dairy farming are the most important sources of farm income. The number of beef cattle has been steadily increasing. The number of milk cows, horses and mules, hogs, sheep, and poultry has been decreasing. Unimproved pasture is mostly common lespedeza. Improved pasture is dominantly tall fescue, white clover, and orchardgrass. Many farmers grow supplemental summer pasture, mostly of millet and sudangrass.

Climate [1]

The climate of DeKalb County is characterized by relatively mild winters, warm summers, and abundant annual rainfall. Although the county is located well inland, it lies in the path of cold air moving southward from Canada and warm, moist air currents moving northward from the Gulf of Mexico. These alternating currents frequently bring sharp daily changes and are chiefly responsible for seasonal variations.

Temperature and precipitation data are shown in table 1. DeKalb County extends from the outer fringes of the Great Basin of Middle Tennessee on the west through a part of the Highland Rim and terminates east of the Caney Fork River at the Center Hill Reservoir. Elevations range from about 500 feet in the basin and lake area to about 1,150 feet along the highest ridges of the Highland Rim. Thus, data in table 1, from records at Smithville, are not representative of all parts of the county.

TEMPERATURE.—The average temperature decreases from west to east. In the extreme western part of the county it is about two degrees warmer than at Smithville, and in the extreme eastern part about two degrees cooler.

[1] By JOHN VAIKSNORAS, State climatologist, National Weather Service, Nashville, Tenn.

TABLE 1.—*Temperature and precipitation*

[Data from Smithville, DeKalb County, Tenn., 1944–45. Elevation 1,078 feet]

Month	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	One year in 10 will have—		Number of days with snow cover	Average depth of snow cover
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—		
	°F.	°F.	°F.	°F.	In.	In.	In.		In.
January	50	33	68	15	8.3	2.5	10.0	13	2.4
February	52	32	69	16	5.5	1.4	7.8	12	1.9
March	59	38	74	24	4.9	3.0	6.1	7	1.3
April	68	46	82	32	3.7	1.5	5.5	(1)	(2)
May	77	55	88	42	4.1	1.7	5.1	(1)	(2)
June	85	64	94	54	4.4	2.1	7.7	(1)	(2)
July	87	66	96	58	3.6	1.2	5.6	0	
August	86	65	95	56	2.9	1.1	5.0	0	
September	81	57	92	46	3.5	.8	3.7	0	
October	73	48	85	34	2.3	.5	4.3	0	
November	58	37	73	23	4.7	1.0	6.0	6	.5
December	51	32	66	17	5.0	2.3	7.4	11	2.1
Year	69	48	[3] 97	[4] 5	52.9	19.1	74.2	49	8.2

[1] Less than 0.5 day. [2] Trace. [3] Average annual maximum. [4] Average annual minimum.

The average annual temperature at Smithville is about 59° F. Temperature extremes were 105° F. and −6° during the period of record. Temperatures exceed 90° on about 53 days each year and drop below 32° on about 76 days. During an average winter, the ground freezes to a depth of about 4 inches. Prolonged periods of very cold or very hot weather are unusual. There are occasional periods of very mild temperatures almost every winter, and during the peak in summer, occasional periods of cool, dry weather. The greatest change in the mean daily maximum and minimum temperatures occurs during October and November, when outbreaks of cold air start moving southward across the State.

The probability of the last freezing temperatures in spring and the first in fall at McMinnville, Warren County, is given in table 2. Average dates of freezing temperatures in other parts of the State vary but are within a week of the dates shown in the table.

PRECIPITATION.—The average annual precipitation in DeKalb County increases from west to east; it reaches a maximum of 54 inches in the eastern part. Total annual rainfall at Smithville was 37.8 inches in 1947 and 64.1 inches in 1950. Precipitation is usually heaviest in winter and spring, as a result of low-pressure systems. A second period of heavy precipitation occurs late in spring and early in summer, when local showers and thunderstorms are common. Precipitation is generally lightest late in summer and early in fall; high-pressure systems are most frequent at this time of the year. Thus, the periods of drought are offset by periods of ample to excessive precipitation throughout the year.

The county is subject to heavy local storms that frequently bring more than 4 inches of rain. Maximum precipitation in a 24-hour period has exceeded 5 inches at nearby stations. The highest monthly precipitation recorded at Smithville during the period 1944 to 1954 was 16.6 inches in January 1950.

SEVERE STORMS.—Severe storms are relatively infrequent in DeKalb County. Only two tornadoes were reported during the period 1916 to 1965. The county is too far inland to be damaged by tropical storms. Hailstorms occur only once or twice a year. Thunderstorms occur on about

TABLE 2.—*Probabilities of freezing temperatures in spring and fall at McMinnville, Warren County, Tenn.*

Probability	Dates for given probability at temperature of—				
	16° F. or lower	20° F. or lower	24° F. or lower	28° F. or lower	32° F. or lower
Spring:					
1 year in 10 later than	March 13	March 24	March 27	April 15	April 26
2 years in 10 later than	March 1	March 13	March 19	April 6	April 18
5 years in 10 later than	February 14	Februray 28	March 10	March 28	April 8
Fall:					
1 year in 10 earlier than	November 25	November 18	November 5	October 27	October 12
2 years in 10 earlier than	December 4	November 24	November 13	November 2	October 20
5 years in 10 earlier than	December 16	December 3	November 21	November 9	October 28

56 days per year. Minor windstorms, often associated with thunderstorms, cause scattered local damage in the county a few times each year. Heavy snowstorms are infrequent, and snow seldom remains on the ground for more than a few days.

Humidity, Wind, and Clouds.—Based on data obtained from surrounding weather stations, the average annual humidity is approximately 70 percent in DeKalb County. The relative humidity throughout the day usually varies inversely with the temperature and is, therefore, highest early in the morning and lowest early in the afternoon. There is also an annual variation in relative humidity; the average daily variation is highest in winter and lowest in spring.

Prevailing winds are southerly. Average windspeed is about 8 miles per hour. Winds are usually strongest early in the afternoon.

Sunshine is abundant, especially during the growing season. Average cloud cover is less than six-tenths.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in DeKalb County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey (*5*)[2].

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all of the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Christian and Dickson, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Christian cherty silt loam, 5 to 12 percent slopes, eroded, is one of several phases within the Christian series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that greatly help in drawing boundaries accurately. The soil map at the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. A soil complex is one such kind of mapping unit shown on the soil map of DeKalb County.

A soil complex consists of areas of two or more soils, so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Bodine-Rock land complex, 30 to 75 percent slopes, is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, or so severely eroded that it cannot be classified by soil series. These places are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Gullied land and Rock land are land types in DeKalb County.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in a way that is readily useful to different groups of readers, among them farmers, managers of woodlands, engineers, community planners, and homeowners.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this publication shows, in color, the soil associations in DeKalb County.

[2] Italic numbers in parentheses refer to Literature Cited, p. 62.

A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in locating sites for engineering work and recreational facilities and for town and country planning. It is not suitable for planning the management of a farm or field, or for selecting the exact location of a road, building, or structure, because the soils in any one association ordinarily differ in slope, depth, texture, stoniness, drainage, and other characteristics that affect their management.

The eight soil associations in DeKalb County are described in the following pages. For more detailed information about the individual soils in each association, refer to the detailed map and to the section "Descriptions of the Soils."

1. Rock land-Talbott Association

Rock land and well-drained, rolling and hilly soils that have a clayey subsoil; in the Central Basin

This association is an area of low hills and many outcrops of limestone (fig. 2). Small tracts of moderately deep soils that have a reddish, clayey subsoil border large, rough areas that are 25 to 90 percent limestone outcrop. Narrow strips of level bottom land meander through the association. Some of this bottom land is adjacent to small benches and low terraces. Most of the soils in this association developed in residuum derived from limestone.

Figure 2.—Landscape in Rock land-Talbott association. Talbott soils are in the foreground and on the ridgetop.

Figure 3.—**Typical landscape in Mimosa-Rock land-Hampshire soil association.**

This association makes up about 4 percent of the county. It is about 55 percent Rock land and 20 percent Talbott soils. The remaining 25 percent consists of many kinds of soils, each having a small acreage.

In areas of Rock land there are many outcrops of limestone bedrock, 2 or 3 feet above the surface, and patches of yellowish and reddish, clayey soil material between the rocks and in places covering the rocks.

The Talbott soils are well drained and about 30 inches deep over rock. They have a brown surface layer and a yellowish-red clay subsoil.

Minor soils in this association are the Arrington, Egam, Lynnville, and Staser soils in narrow strips along streams and the Armour, Capshaw, and Mimosa soils in small areas on low terraces, foot slopes, and the lower part of hillsides.

Most of the rocky areas are in heavily cutover forest, largely redcedar and hickory. The rest has been cleared and is used mostly for pasture.

The average farm in this association is about 100 acres. Nearly all crops are grown on foot slopes and in narrow valleys. Tobacco is the main cash crop. Trees are harvested for fenceposts and lumber in the rocky, forested areas. Beef cattle and dairy cattle are an important part of farm enterprise throughout the association. Most of the milk is sold to a cheese plant in Alexandria.

Farming is limited because of the small acreage suitable for cultivation. Lespedeza and tall fescue grow well where the soils are not too rocky. Natural stands of bluegrass grow well in spring when moisture is plentiful.

Limitations are severe for engineering construction, especially highway construction. Most deep cuts require excavation of several feet of massive limestone.

2. Mimosa-Rock land-Hampshire Association

Rock land and well-drained, rolling to steep soils that have a clayey subsoil; in the Central Basin

This association is an area of rolling steep hills and narrow winding valleys (fig. 3). Outcrops of limestone bedrock are on many of the hillsides. Narrow strips of nearly level bottom land are along the meandering streams, and small areas of benches and foot slopes commonly lie below the steep hillsides. All of this association is underlain by phosphatic limestone. The soils on uplands are generally less than 4 feet deep; those on foot slopes and bottom land are somewhat deeper.

This association makes up about 7 percent of the county. It is about 40 percent Mimosa soils, 30 percent Rock land, and 20 percent Hampshire soils. The rest is minor soils.

The Mimosa soils, which are on hillsides, have a surface layer of dark-brown silt loam or cherty silt loam and a subsoil of yellowish-brown or strong-brown clay. Limestone is generally at a depth of 2 to 5 feet, but it crops out in many areas.

Rock land consists of hilly and steep areas too rough to farm because about half the acreage is limestone outcrops, some of which extend 3 feet above the surface.

The Hampshire soils are mainly on short hillsides. They have a surface layer of brown silt loam and a subsoil of dominantly strong-brown, clayey material. Under this is sandy or shaly limestone.

Minor in this association are the Inman and Stiversville soils on hillsides, the Hicks soils on broad hilltops, and the Arrington, Armour, Egam, Lynnville, and Staser soils in valleys and on foot slopes.

Figure 4.—Landscape in Bodine-Mimosa-Dellrose soil association. Bodine soils are on the wooded hilltop. Dellrose soils occupy the cleared field in the middle part of the slope, and Mimosa soils and Rock land are on the lower slopes. Narrow strips of Lynnville and Staser soils are in the foreground.

Most areas in valleys and on hillsides that are not too rocky have been cleared and are used mainly for pasture. Small areas on the bottom land and foot slopes are in row crops and hay. Most of the very rocky areas are in hardwoods, mainly redcedar and hickory. Fenceposts and lumber are harvested.

An average farm in this association is about 110 acres. Dairying and raising beef cattle are the main enterprises. Pasture is fairly plentiful. Most of the row crops and hay, however, are grown in small fields on foot slopes and bottom land. Tobacco is the main cash crop. Food and cover for wildlife are available.

The hilly topography and outcrops of rock severely limit engineering construction, especially for highways. Most deep cuts require excavating several feet of massive limestone.

3. Bodine-Mimosa-Dellrose Association

Excessively drained and well-drained, rolling to steep, cherty soils and well-drained soils that have a clayey subsoil; in the Central Basin and on the Highland Rim

This association is characterized by narrow, winding, cherty ridges, long, steep hillsides, and deep hollows (fig. 4). The ridges rise 200 to 300 feet above the valleys. The high ridges are capped with beds of chert, and these beds make up approximately the upper third of the ridges. Below this is phosphatic limestone. The valleys are mainly V-shaped at the head, but they widen near large creeks or streams. Outcrops of limestone are common on the lower part of hillsides. Center Hill Lake occupies much of the bottom land.

This association makes up about 48 percent of the county. It is about 30 percent Bodine soils, 25 percent Mimosa soils, and 14 percent Dellrose soils. The rest is minor soils.

The Bodine soils are on the upper part of side slopes and ridgetops. They are cherty throughout.

The Mimosa soils are on the lower part of hills and on low-lying knobs. They have a dark-brown, loamy surface layer and a yellowish-brown or strong-brown clay subsoil. Outcrops of limestone are numerous in many areas of Mimosa soils.

The steep Dellrose soils are on long hillsides. They are dark brown or brown, deep, and fertile, and they contain many fragments of chert.

Minor soils are the Arrington, Egam, Lynnville, and Staser soils on bottom land along Dry Creek and in other narrow valleys, and the Armour soils on foot slopes and low terraces.

Most of the steep, upper parts of ridges are forested with cutover hardwoods. The rocky areas also are forested, chiefly with redcedar. About 60 percent of the acreage has been cleared. Most of this is used for pasture. A small acreage is used for cultivated crops. Most of the crops are grown in the narrow valleys and on the few ridgetops that have been cleared.

An average farm in this association is about 105 acres. The main enterprise is raising beef cattle. Tobacco is the

main cash crop. The Army Corps of Engineers owns the area that surrounds Center Hill Lake. This area provides food and cover for wildlife. Part of it is forest; the rest is reverting to forest.

Farming is severely limited by steep slopes and rockiness. Areas suitable for pasture are fairly plentiful, but only small tracts in the valley are suitable for row crops. Pasture is difficult to maintain on the steep slopes; it is invaded by briers, locusts, and weeds.

Limitations are severe for engineering construction, especially highways. The steep Bodine and Dellrose soils are likely to slip and slide if cuts are made in the hillsides. Most deep cuts require excavation of several feet of massive limestone.

4. Dickson-Sango-Guthrie Association

Moderately well drained and poorly drained, level and undulating, loamy soils that have a compacted layer (fragipan) in the subsoil; on the Highland Rim

Broad upland flats, gently rolling hills, and shallow, winding drainageways form the general pattern of this association. In some places there are shallow basins where water collects and then drains slowly away. Short, mild slopes flank the drainageways and surround the basins in most areas. The city of Smithville extends into this association.

This association makes up about 9 percent of the county. It is about 55 percent Dickson soils, 10 percent Sango soils, and 10 percent Guthrie soils. The remaining 25 percent is minor soils.

The dominant soils in this association have a fragipan. They formed in 2 or 3 feet of silty material, or loess, over reddish cherty clay.

The Dickson and Sango soils occupy most of the gently rolling areas and broad flats. They are moderately well drained and have a compact layer, or fragipan, at a depth of about 24 inches. Sango soils are the more silty and have the thicker fragipan.

The Guthrie soils are gray and poorly drained. They occupy the lowest areas, some of which are small basins that lack drainage outlets.

Minor soils are the Ennis, Lobelville, Mountview, and Taft soils. Mountview soils are in the higher, more rolling areas; Taft soils are in the low areas next to Guthrie soils; and Ennis and Lobelville soils occur as narrow strips on bottom land.

Most of this association has been cleared. Only a few low, wet areas are in hardwoods. An average farm is about 125 acres. Corn, hay, nursery plants, tobacco, and pasture plants are the main crops (fig. 5). Raising beef cattle is probably the most important enterprise. Nursery stock is important also.

The soils are fairly well suited to farming, but they are strongly acid and low in natural fertility. Nearly all of the acreage can be used for crops grown in suitable rotations. Excess water in the low areas, low fertility of the soils, and a moderate hazard of erosion on the slopes are the main limitations in management. The response to management is good.

In most places limitations are severe for septic tank disposal fields because of slow percolation.

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***Figure 5.*—Typical area in Dickson-Sango-Guthrie soil association. Pasture consisting of tall fescue is in the foreground. A field of corn is in the far background.**

5. Dickson-Mountview-Christian Association

Moderately well drained and well drained, undulating to hilly, loamy soils that have a fragipan or clayey layer in the subsoil; on the Highland Rim

This association is an area of broad, rounded, gently rolling and rolling hills (fig. 6). Narrow bands of steep slopes flank some of the deeper drainageways. Strips of bottom land along drainageways are normally less than 100 feet wide.

This association makes up about 10 percent of the county. It is about 35 percent Dickson soils, 30 percent Mountview soils, and 10 percent Christian soils. The remaining 25 percent is minor soils.

The major soils formed in 2 or 3 feet of silty material, or loess, that is dominantly underlain by yellowish-red, clayey material. On a few short hillsides are well-drained soils that have a clayey subsoil and that formed in material weathered from shaly limestone.

The Dickson soils have a fragipan at a depth of about 24 inches. They are in the gently rolling areas and on upland flats.

The Mountview soils are similar to the Dickson soils, but they are well drained, do not have a fragipan, and occur in the more rolling areas slightly above the Dickson soils.

The Christian soils are on the short hillsides. These soils are well drained and have a yellowish-red, clayey subsoil.

Small areas of the somewhat poorly drained Taft soils and the poorly drained Guthrie soils, both of which are minor in this association, occupy the lowest places. Other minor soils are the well-drained Ennis soils and the moderately well drained Lobelville soils that occupy narrow strips of bottom land.

Most of this association is used for pasture and hay. Small acreages are used for corn, tobacco, and nursery stock. Raising beef cattle is the main farm enterprise. Tobacco and nursery stock are the main cash crops. An average farm is about 120 acres.

Most of this association can be used for crops grown in suitable rotations, but only a small acreage can be used for row crops every year. A large acreage is suitable for pasture and hay.

Figure 6.—**Typical landscape in Dickson-Mountview-Christian soil association. Dickson and Mountview soils are in broad, gently rolling areas. Christian soils are on short hillsides.**

The main limitations on this association are low fertility, poor drainage in low places, and a moderate erosion hazard on slopes. Response to fertilizer and management is good.

6. Christian-Bodine Association

Well-drained, rolling to hilly soils that have a clayey subsoil and excessively drained, steep, cherty soils; on the Highland Rim

This association is an area of high, rounded hills and deep, narrow hollows. Small, gently rolling areas are on the winding hilltops. The hollows are V-shaped at the head, but they widen into narrow strips of fertile bottom land near the larger streams. Most of the soils formed in residuum from cherty limestone and shaly limestone. Some hilltops are capped with a foot or two of loess.

This association makes up about 18 percent of the county. It is about 30 percent Christian soils and 30 percent Bodine soils. The remaining 40 percent is minor soils.

The Christian soils are on the lower hills and the upper parts of high hills. They have a surface layer of brown silt loam or cherty silt loam and a subsoil that is dominantly reddish clay. The Bodine soils are cherty and have long, steep slopes.

The minor soils in this association are the well-drained, rolling Mountview soils on hilltops; small areas of the nearly level Dickson soils on hilltops; narrow strips of Ennis, Lobelville, and Staser soils on bottom land; and small tracts of Etowah soils on foot slopes adjacent to the bottom land. Strips of Rock land wind around some of the lower slopes below the Bodine soils.

Most of the steep, cherty soils are in cutover hardwood forest. Soils less steep are used mainly for pasture. Small fields on hilltops and in narrow valleys are used for corn, tobacco, and hay.

An average farm in this association is about 120 acres. Raising beef cattle is the dominant type of farming. Tobacco is the main cash crop. About half the acreage is steep or very steep and is suited to woodland, recreational facilities, and wildlife habitat. The rest is fairly productive pasture. Small tracts on hilltops and in the narrow valleys are suitable for cultivation.

Slope is the main limitation in engineering. Deep cuts are required in highway construction. The cherty soils in this association provide good fill material.

7. Waynesboro-Christian Association

Well-drained, rolling and hilly soils that have a dominantly reddish, clayey subsoil; on the Highland Rim

This association occurs mainly as broad areas along the Caney Fork River, adjacent to Center Hill Lake.

Fairly large rolling areas are bordered by steep hills. The surface is pitted by oval or irregularly shaped limestone sinks and depressions.

This association makes up 3 percent of the county. It is about 60 percent Waynesboro soils and 10 percent Christian soils. The remaining 30 percent is minor soils.

Much of the association is covered by several feet of old alluvium. This alluvium is underlain by dominantly reddish clay that is exposed on the steeper slopes.

The Waynesboro soils occupy most of the smoother areas and areas that surround depressions. These soils are deep, are well drained, and have a dominantly red or dark-red subsoil.

The Christian soils have the steeper slopes and are on hillsides. They have a surface layer of brown silt loam or cherty silt loam and a dominantly reddish, clayey subsoil.

Small areas of steep, cherty Bodine soils, which are minor in this association, border Center Hill Lake. A few areas of Rock land are intermingled with Bodine soils. Small tracts of Ennis and Lobelville soils are on bottom land, mainly in depressions.

The soils in this association are used mainly for pasture. Most of the steep, cherty, and rocky areas are in forest.

An average farm is about 100 acres. Raising beef cattle is the main farm enterprise. Small patches of tobacco are grown on some farms. The main limitation to farming is the strong slope. Suitable pasture is fairly plentiful, but the acreage suitable for cultivation is small.

8. Bodine-Fullerton Association

Excessively drained and well-drained, rolling to steep, cherty soils; on the Highland Rim

This association consists of fairly high, rounded, cherty hills and narrow hollows. A few of the hilltops are broad enough to accommodate gently rolling, 2- to 5-acre fields. The hillsides are long and steep and terminate in V-shaped hollows.

This association makes up only about 1 percent of the county. It is about 35 percent Bodine soils and 35 percent Fullerton soils. The remaining 30 percent is minor soils.

The soils in this association formed in residuum derived from cherty limestone. The Bodine soils are cherty and have the steepest slopes. The Fullerton soils have a surface layer of brown cherty silt loam and commonly a subsoil of yellowish-red cherty clay. These soils are on short hillsides and the upper part of long slopes.

The minor soils are the well-drained Mountview soils on hilltops and the Ennis and Lobelville soils in narrow strips along drainageways.

Except for a few of the steepest slopes, this association has been cleared. Pasture is the main use. Patches of cultivated crops grow in narrow hollows and in small fields on hilltops.

An average farm in this association is about 100 acres. The main farm enterprises are raising beef cattle and cash crops, chiefly tobacco. Acreages are small. The main limitation is the slope. Much of the association produces good pasture, but only small tracts, mainly on hilltops, are suitable for row crops.

Descriptions of the Soils

This section describes the soil series and the mapping units in DeKalb County. For full information on any one mapping unit, it is necessary to read both the description of that unit and also the description of the soil series to which it belongs.

Each soil series contains two descriptions of a soil profile. The first is brief and in terms familiar to a layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Gullied land and Rock land, for example, do not belong to a series but, nevertheless, are listed in alphabetic order along with the soil series.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the capability unit and the woodland group in which the mapping unit has been placed. The page on which each capability unit and woodland group is described can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 3. Many terms used in describing the soils can be found in the Glossary at the end of this survey.

Armour Series

The Armour series consists of deep, well-drained soils. These soils are on stream terraces and foot slopes in the valleys of the Central Basin, mainly in the western part of the county. Slopes range from 2 to 12 percent.

In a representative profile the surface layer is dark-brown silt loam about 8 inches thick. The upper 4 inches of the subsoil is brown, friable silt loam. Below this, to a depth of about 55 inches, is brown, friable silty clay loam.

Representative profile of Armour silt loam, 2 to 5 percent slopes:

Ap—0 to 8 inches, dark-brown (10YR 3/3) silt loam; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary.

B1—8 to 12 inches, brown (7.5YR 4/4) silt loam; dark-brown (10YR 3/3) worm casts; weak, medium, subangular blocky structure; friable; strongly acid; clear, smooth boundary.

B21t—12 to 27 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; friable; clay films on ped faces; strongly acid; gradual, smooth boundary.

B22t—27 to 38 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; friable; clay films on ped faces; few iron and manganese concretions; strongly acid; gradual, smooth boundary.

B23t—38 to 55 inches, brown (7.5YR 5/4) silty clay loam; moderate, fine, subangular blocky structure; friable; clay films on ped faces; strongly acid.

The Ap horizon ranges from 4 to 8 inches in thickness. The B23t horizon is yellowish-brown or brown silty clay loam or clay. There may be a few chert fragments in any layer. In unlimed areas, reaction is medium acid or strongly acid throughout the profile. Depth to bedrock ranges from 4 to 10 feet.

TABLE 3.—*Approximate acreage and proportionate extent of the soils*

Soils	Area	Extent	Soils	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Armour silt loam, 2 to 5 percent slopes	1,600	0.9	Inman flaggy silt loam, 12 to 30 percent slopes, eroded	560	0.3
Armour silt loam, 5 to 12 percent slopes	1,370	.8	Lobelville cherty silt loam	570	.3
Arrington silt loam	2,460	1.4	Lobelville silt loam	650	.4
Bodine cherty silt loam, 5 to 20 percent slopes	7,020	4.0	Lynnville silt loam	490	.3
Bodine cherty silt loam, 20 to 50 percent slopes	25,590	14.5	Mimosa very rocky soils, 5 to 20 percent slopes	4,220	2.4
Bodine-Rock land complex, 30 to 75 percent slopes	7,480	4.2	Mimosa very rocky soils, 20 to 40 percent slopes	13,700	7.8
Capshaw silt loam, phosphatic, 2 to 5 percent slopes	340	.2	Mimosa cherty silt loam, 5 to 12 percent slopes, eroded	260	.1
Christian cherty silt loam, 5 to 12 percent slopes, eroded	2,830	1.6	Mimosa cherty silt loam, 12 to 20 percent slopes, eroded	940	.5
Christian cherty silt loam, 12 to 20 percent slopes, eroded	3,390	1.9	Mimosa cherty silt loam, 20 to 30 percent slopes, eroded	5,630	3.2
Christian cherty silt loam, 20 to 30 percent slopes, eroded	2,700	1.5	Mimosa silt loam, 2 to 5 percent slopes	310	.2
Christian silt loam, 5 to 12 percent slopes, eroded	3,040	1.7	Mimosa silt loam, 5 to 12 percent slopes, eroded	1,710	1.0
Christian silty clay, 5 to 12 percent slopes, severely eroded	950	.5	Mimosa silt loam, 12 to 20 percent slopes, eroded	620	.3
Dellrose cherty silt loam, 20 to 35 percent slopes	7,670	4.3	Mountview silt loam, 2 to 5 percent slopes	4,920	2.8
Dellrose cherty silt loam, 35 to 55 percent slopes	4,400	2.5	Mountview silt loam, 5 to 12 percent slopes, eroded	2,820	1.6
Dickson silt loam, 0 to 2 percent slopes	1,420	.8	Rock land	19,630	11.1
Dickson silt loam, 2 to 5 percent slopes	17,270	9.8	Sango silt loam	2,260	1.3
Dowellton silt loam, 2 to 12 percent slopes	230	.1	Staser cherty silt loam	1,360	.8
Egam silt loam	980	.6	Stiversville loam, 12 to 30 percent slopes, eroded	510	.3
Ennis cherty silt loam	550	.3	Taft silt loam	2,470	1.4
Ennis silt loam	420	.2	Talbott very rocky soils, 5 to 20 percent slopes	520	.3
Etowah cherty silt loam, 2 to 12 percent slopes	640	.4	Talbott silt loam, 2 to 12 percent slopes, eroded	660	.4
Etowah silt loam, 2 to 5 percent slopes	320	.2	Tarklin cherty silt loam, 2 to 5 percent slopes	390	.2
Fullerton cherty silt loam, 5 to 12 percent slopes, eroded	6,510	3.7	Tarklin cherty silt loam, 5 to 12 percent slopes, eroded	800	.4
Fullerton cherty silt loam, 12 to 25 percent slopes, eroded	1,410	.8	Waynesboro loam, 2 to 5 percent slopes, eroded	310	.2
Gullied land	400	.2	Waynesboro loam, 5 to 12 percent slopes, eroded	2,500	1.4
Guthrie silt loam	2,220	1.3	Waynesboro loam, 12 to 20 percent slopes, eroded	420	.2
Hampshire silt loam, 5 to 12 percent slopes, eroded	1,090	.6	Waynesboro clay loam, 12 to 20 percent slopes, severely eroded	300	.2
Hampshire silt loam, 12 to 20 percent slopes, eroded	1,580	.9	Total	176,640	100.0
Hampshire silt loam, 20 to 30 percent slopes, eroded	850	.5			
Hicks silt loam, 5 to 12 percent slopes	380	.2			

Armour silt loam, 2 to 5 percent slopes (ArB).—This deep, well-drained, loamy soil is on stream terraces and on foot slopes in the Central Basin. It has the profile described as representative for the series. The surface layer is 6 to 8 inches thick.

Figure 7.—Hay on Armour silt loam, 2 to 5 percent slopes.

Included with this soil in mapping are a few areas that have chert or gravel on the surface and throughout the profile.

This soil has a deep root zone and high available water capacity. It is high in phosphorus and is strongly acid or medium acid.

This soil is well suited to all crops commonly grown in the county (fig. 7). It is used mostly for row crops. Because this soil has gentle slopes and is well drained, it is among the soils preferred for growing tobacco and truck crops. The response to management is extremely good. Capability unit IIe–1; woodland group 2o7.

Armour silt loam, 5 to 12 percent slopes (ArC).—This soil occurs as scattered, 5- to 10-acre tracts throughout the northwestern part of the county. It is on terraces and foot slopes in the Central Basin. The plow layer is dark-brown silt loam 4 to 8 inches thick. The subsoil, to a depth of about 30 inches, is dominantly brown, friable silty clay

loam. Below a depth of 30 inches is yellowish-brown or brown silty clay loam or clay.

Included with this soil in mapping are a few areas of soils that have a cherty surface layer and subsoil.

This soil has a deep root zone and high available water capacity. It is medium acid or strongly acid and is high in phosphorus.

This soil is well suited to all the commonly grown crops. It is used for row crops, hay, and pasture. Controlling erosion is the main problem. Capability unit IIIe–1; woodland group 207.

Arrington Series

The Arrington series consists of deep, well-drained soils on first bottoms. These soils consist of recently deposited sediments washed from soils derived from limestone. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark-brown and very dark brown, very friable silt loam. Below this is dark yellowish-brown, friable silt loam.

Representative profile of Arrington silt loam:

Ap—0 to 8 inches, dark-brown (10YR 3/3) silt loam; moderate, fine, granular structure; very friable; neutral; clear, smooth boundary.

A11—8 to 26 inches, dark-brown (10YR 3/3) silt loam; moderate, fine, granular structure; very friable; neutral; clear, smooth boundary.

A12—26 to 36 inches, very dark brown (10YR 2/2) silt loam; weak, fine, granular structure; very friable; neutral; gradual, smooth boundary.

A13—36 to 48 inches, dark-brown (10YR 3/3) silt loam; weak, fine, granular structure; very friable; neutral; gradual, smooth boundary.

C—48 to 60 inches, dark yellowish-brown (10YR 3/4) silt loam; weak, fine, subangular blocky structure to massive; friable; slightly acid.

The A horizon ranges from 24 to 55 inches in thickness and from brown to very dark brown in color. The C horizon is silty clay loam in a few places. There are a few chert fragments 1 or 2 inches in diameter on the surface and throughout the profile. Reaction ranges from medium acid to neutral throughout.

Arrington silt loam (At).—This well-drained, level soil is on flood plains, along drainageways, and in depressions in the Central Basin.

This soil is medium acid through neutral and is high in fertility. It is medium to high in phosphorus. The available water capacity is high, and permeability is moderate. Surface runoff is medium or slow.

This soil is well suited to the row crops commonly grown. It can be cultivated every year. Most areas have been cleared and are used for crops and pasture. The response to management is good. Lower areas are subject to occasional flooding. Capability unit I–1; woodland group 2o7.

Bodine Series

The Bodine series consists of cherty, excessively drained, strongly acid or very strongly acid soils (fig. 8). These soils are on narrow ridge crests and hillsides in the highly dissected areas of the Highland Rim. They developed in residuum derived from cherty limestone. Slopes range from 5 to 75 percent.

In a representative profile the surface layer is mainly brown cherty silt loam about 5 inches thick. The subsoil, to a depth of 43 inches, is friable cherty silt loam that is light yellowish brown in the upper part and yellowish brown in the lower part. Between depths of 43 and 79 inches, the subsoil is a mixture of chert fragments and mottled, reddish-brown silty clay loam.

Figure 8.—**Profile of a Bodine cherty silt loam.**

Representative profile of Bodine cherty silt loam, 20 to 50 percent slopes:

A1—0 to 1 inch, very dark grayish-brown (10YR 3/2) cherty silt loam; moderate, medium, granular structure; very friable; strongly acid; abrupt, smooth boundary.

A2—1 to 5 inches, brown (10YR 5/3) cherty silt loam; moderate, medium, granular structure; very friable; very strongly acid; clear, wavy boundary.

B21t—5 to 23 inches, light yellowish-brown (10YR 6/4) cherty silt loam; weak and moderate, fine, subangular blocky structure; friable; thin patchy clay films on some ped faces and on chert fragments; about 45 percent chert fragments; very strongly acid; clear, wavy boundary.

B22t 23 to 43 inches, yellowish-brown (10YR 5/4) cherty silt loam; common, medium, faint mottles of pale brown (10YR 6/3); weak and moderate, fine, subangular blocky structure; friable; patchy clay films on some ped faces and chert fragments; 50 to 60 percent chert fragments; very strongly acid; clear, wavy boundary.

B23t—43 to 79 inches, stratified chert; interstices filled with reddish-brown (5YR 5/4) cherty silty clay loam; common, medium, distinct mottles of very dark brown (10YR 2/2) and pale brown (10YR 6/3); 70 percent chert fragments; clay films on chert fragments and on some ped faces; very strongly acid.

The A horizon is 15 to 50 percent chert fragments, ½ inch to 8 inches in diameter, and the B horizon 35 to 75 percent. The B2 horizon is yellowish-brown, strong-brown, or reddish-brown cherty or very cherty silt loam and silty clay loam. Depth to rock ranges from 5 to 12 feet. In unlimed areas, reaction is strongly acid or very strongly acid throughout the profile.

Bodine cherty silt loam, 5 to 20 percent slopes (BoD).—This cherty soil is on narrow, choppy ridgetops in highly dissected areas on the Highland Rim. The surface layer is pale brown and about 5 inches thick. The subsoil is yellowish-brown cherty or very cherty silty clay loam or cherty or very cherty silt loam. The chert fragments range from ½ inch to 8 inches in diameter and make up 35 to 70 percent of the soil mass. Depth to rock ranges from 5 to 12 feet.

This soil is excessively drained. It has low available water capacity and rapid permeability. It is low in fertility and is strongly acid or very strongly acid.

This soil is poorly suited to row crops and is only fairly well suited to pasture. About 20 to 30 percent of the acreage has been cleared. Most of the cleared areas are used for crops or unimproved pasture or are idle. Capability unit VIs–1; woodland group 3f8.

Bodine cherty silt loam, 20 to 50 percent slopes (BoF).—This is an excessively drained, steep soil in highly dissected, wooded areas on the Highland Rim. It has the profile described as representative for the series. It is 40 to 75 percent chert fragments; the fragments increase in number and size with increasing depth. Partly decomposed bedrock is at a depth of 5 to 10 feet.

In unlimed areas, this soil is very strongly acid. Fertility is low, the available water capacity is low, and permeability is rapid.

This soil is too cherty and too steep to be suited to tilled crops. It is suited to trees. The less sloping parts can be used for pasture. Most of the plant growth is in spring. Only about 5 percent of the acreage has been cleared. Capability unit VIIs–1; woodland group 4f3.

Bodine-Rock land complex, 30 to 75 percent slopes (BrF).—This complex is about 80 percent Bodine cherty silt loam and 20 percent Rock land. It occurs on side slopes of the Highland Rim. Ledges of cherty limestone are exposed in 15 to 25 percent of each area.

The Bodine soil has a surface layer of brown cherty silt loam and a subsoil of yellowish-brown, friable cherty or very cherty silt loam. The soil material between the rock ledges is 40 to 75 percent chert fragments ½ inch to 8 inches in diameter. The fragments increase in size and number with increasing depth.

The Bodine soil is excessively drained. It has low available water capacity and rapid permeability. It is very strongly acid and is low in fertility.

Because of the slope and ledges of limestone, this soil is better suited to woodland than to pasture. Capability unit VIIs–1; woodland group 4f3.

Capshaw Series

The Capshaw series consists of deep, moderately well drained soils on stream terraces in the Central Basin. These soils developed in material washed from soils derived mainly from phosphatic limestone. Slopes range from 2 to 5 percent.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil, about 53 inches thick, is dark yellowish-brown, friable, heavy silt loam in the uppermost part; yellowish-brown, firm silty clay loam in the middle part; and yellowish-brown, brown, and gray, firm clay in the lowermost part.

Representative profile of Capshaw silt loam, phosphatic, 2 to 5 percent slopes:

Ap—0 to 7 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; strongly acid; abrupt, smooth boundary.

B1—7 to 15 inches, dark yellowish-brown (10YR 4/4) heavy silt loam; weak, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary.

B21t—15 to 21 inches, yellowish-brown (10YR 5/6) silty clay loam; moderate, medium and fine, subangular blocky structure; firm; few clay films; few dark concretions and gravel; strongly acid; gradual, smooth boundary.

B22t—21 to 26 inches, yellowish-brown (10YR 5/6) silty clay loam; common, medium, distinct mottles of brown (10YR 5/3) and light brownish gray (10YR 6/2); moderate, medium and fine, subangular blocky structure; firm; clay films on ped faces; few dark concretions and gravel; strongly acid; gradual, smooth boundary.

B23t—26 to 40 inches, mottled yellowish-brown (10YR 5/6), brown (10YR 5/3), and gray (10YR 5/1) clay; weak, medium, subangular blocky structure; firm; patchy clay films; common dark concretions and gravel; strongly acid; gradual, smooth boundary.

B3—40 to 60 inches, yellowish-brown (10YR 5/6) clay; common, coarse, distinct mottles of light brownish gray (10YR 6/2) and brown (10YR 5/3); weak, medium, subangular blocky structure to massive; firm; many dark concretions and much small gravel; slightly acid.

The A horizon ranges from 6 to 8 inches in thickness. The B23t and B3 horizons are dominantly yellowish-brown or brown silty clay or clay mottled with gray. The alluvial deposits range from 3 to 6 feet in thickness. A small amount of chert and gravel is on the surface or throughout the profile in some places. In unlimed areas, reaction is strongly acid in the upper 2 or 3 feet and ranges from strongly acid to slightly acid below.

Capshaw silt loam, phosphatic, 2 to 5 percent slopes (CaB).—This moderately well drained soil is on stream terraces in the Central Basin. It occupies areas 2 to 10 acres in size.

Included with this soil in mapping are a few areas where the soils have chert or gravel in the surface layer and subsoil and a few areas where they have a weak fragipan.

This soil is high in phosphorus. It is strongly acid in the upper 2 or 3 feet and ranges from strongly acid through slightly acid below. The available water capacity is medium.

This soil is suited to most of the crops commonly grown in the county. Tobacco can be grown where water does not

stand on the surface. Almost all the acreage is used for row crops and pasture. The response to management is good. Capability unit IIe–3; woodland group 3o7.

Christian Series

The Christian series consists of moderately deep and deep, well-drained soils on uplands of the Highland Rim. These soils developed in material weathered from limestone that contains lenses and pockets of siltstone, sandstone, and cherty limestone. Slopes range from 5 to 30 percent.

In a representative profile the surface layer is brown cherty silt loam about 7 inches thick. The upper 10 inches of the subsoil is yellowish-brown, friable silty clay loam. Below this, to a depth of about 65 inches, is strong-brown and yellowish-red, firm clay that is mottled in the lower part with shades of brown and yellow.

Representative profile of Christian cherty silt loam, 5 to 12 percent slopes, eroded:

Ap—0 to 7 inches, brown (10YR 4/3) cherty silt loam; moderate, medium, granular structure; friable; medium acid; clear, smooth boundary.

B21t—7 to 17 inches, yellowish-brown (10YR 5/6) silty clay loam; moderate, medium, subangular blocky structure; friable; patchy clay films; very strongly acid; clear, smooth boundary.

B22t—17 to 21 inches, strong-brown (7.5YR 5/6) clay; strong, medium, subangular blocky structure; firm; continuous clay films; very strongly acid; clear, smooth boundary.

B23t—21 to 45 inches, yellowish-red (5YR 4/6) clay; common, medium, distinct mottles of light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/6); strong, medium, angular and subangular blocky structure; firm; continuous clay films; very strongly acid; gradual, wavy boundary.

B3—45 to 60 inches, yellowish-red (5YR 4/6) clay; common, medium, distinct mottles of yellowish brown (10YR 5/6) and yellow (10YR 7/6); weak, medium, subangular blocky structure; relict rock structure is visible in places; firm; very strongly acid; gradual, wavy boundary.

C—60 to 65 inches, yellowish-red (5YR 5/6) clay; common, medium, distinct mottles of brownish yellow (10YR 6/6); weak, coarse, platy structure to massive; firm; very strongly acid.

The A horizon is brown, dark grayish-brown, or yellowish-brown silt loam, cherty silt loam, or silty clay. It ranges from 5 to 8 inches in thickness and is very friable, friable, or firm. It is as much as 30 percent chert fragments, 1 to 4 inches in diameter. There are a few chert fragments in the B and C horizons. The B21t horizon ranges up to 10 inches in thickness. The B22t horizon ranges from strong brown through yellowish red. In unlimed areas, reaction is strongly acid or very strongly acid. Depth to bedrock is 4 to 7 feet.

Christian cherty silt loam, 5 to 12 percent slopes, eroded (CcC2).—This rolling soil is on low hills of the Highland Rim (fig. 9). It has the profile described as representative for the series. In many places the plow layer is mixed with reddish clay from the subsoil. Chert fragments, 1 to 4 inches in diameter, are on the surface, and in some places pockets or beds of chert extend through the subsoil to bedrock.

In unlimed areas this soil is strongly acid or very strongly acid. Permeability is moderately slow, surface runoff is medium, and the available water capacity is medium. Much water is retained in this soil, but it is held so tightly in the clayey subsoil that only a small amount is available to plants.

Figure 9.—**Pasture of tall fescue on Christian silt loam, 5 to 12 percent slopes, eroded.**

This soil is only moderately well suited to crops because of the slope and droughtiness. It is better suited to small grains, grasses, and legumes than to row crops. Most of the acreage is used for pasture or hay. About 10 percent is woodland. Capability unit IVe–2; woodland group 3o7.

Christian cherty silt loam, 12 to 20 percent slopes, eroded (CcD2).—This soil is on hillsides of the Highland Rim. Depth to shaly limestone ranges from about 4 to 7 feet. The plow layer is brown cherty silt loam 5 to 8 inches thick. The subsoil is dominantly yellowish-red, firm clay that is mottled with shades of yellow and brown in the lower part. Most of the chert fragments are in the plow layer; only a few are in the subsoil.

Included with this soil in mapping are small patches of a soil that has a plow layer of reddish silty clay loam.

In unlimed areas, this soil is strongly acid or very strongly acid. The available water capacity is medium.

This soil is poorly suited to row crops and to annual crops that are grown in summer. It is moderately well suited to pasture plants. The response to fertilization and other management is moderately good. Most of the acreage is used for pasture or hay. About 20 percent is woodland. Capability unit VIe–2; woodland group 3o7.

Christian cherty silt loam, 20 to 30 percent slopes, eroded (CcE2).—This steep, cherty soil is on hillsides of the Highland Rim. Its plow layer is mainly brown cherty silt loam, but in some places it is mixed with a small amount of material from the subsoil. The subsoil is dominantly yellowish-red, firm clay mottled with shades of brown and yellow.

This soil is somewhat droughty and is highly susceptible to erosion. In unlimed areas, it is strongly acid or very strongly acid. Surface runoff is medium, permeability is moderately slow, and the available water capacity is medium.

The soil is poorly suited to tilled crops. It is better suited to pasture or trees. Nearly all of the acreage was once cleared and used for pasture and row crops, but large areas are now idle, abandoned, or in unimproved pasture. Only a small acreage is used for crops. Pine seedlings have been planted in some areas. Capability unit VIe–2; woodland group 3r8.

Christian silt loam, 5 to 12 percent slopes, eroded (ChC2).—This rolling soil is on uplands of the Highland Rim. Its surface layer is brown or yellowish-brown silt loam 6 to 8 inches thick. The subsoil is dominantly yellowish-red, firm clay. Depth to shaly and cherty limestone ranges from 4 to 7 feet.

In unlimed areas, this soil is strongly acid or very strongly acid. It retains considerable moisture, but much of this is held by the clayey subsoil and is not available to plants. The available water capacity is medium.

This soil is not suited to intensive cropping. It is not well suited to corn and other row crops because the water supply is limited. If adequately limed, fertilized, and otherwise well managed, it is suited to small grains, hay, and pasture. Most of the acreage is used for pasture. About 20 percent is woodland. Capability unit IIIe–2; woodland group 3o7.

Christian silty clay, 5 to 12 percent slopes, severely eroded (CnC3).—This soil occupies 5- to 10-acre tracts on uplands of the Highland Rim. Shallow rills and gullies are common. The plow layer is brown or yellowish-brown, firm silty clay 5 or 6 inches thick. The subsoil is dominantly yellowish-red, firm clay. In a few areas the surface layer contains chert fragments.

In unlimed areas, this soil is strongly acid or very strongly acid. It is generally in poor tilth, and it clods easily if worked when wet. Because the subsoil is clayey, the available water capacity is low. Permeability is moderately slow.

Because of the slope and droughtiness, the soil is poorly suited to row crops. If adequately limed, fertilized, and otherwise well managed, it is suited to small grains, pasture, and hay crops. Pasture plants grow slowly in summer because moisture is limited. Almost all of the acreage has been cleared. A large acreage is now idle. Capability unit VIe–2; woodland group 4c3.

Dellrose Series

The Dellrose series consists of deep, well-drained, cherty soils on hillsides in the outer part of the Central Basin. These soils developed in material moved downslope from higher areas. Slopes range from 20 to 55 percent.

In a representative profile the surface layer is dark-brown cherty silt loam about 10 inches thick. The upper 10 inches of the subsoil is brown cherty silt loam. Below this, to a depth of about 70 inches, the subsoil is brown and strong-brown cherty silty clay loam.

Representative profile of Dellrose cherty silt loam, 20 to 35 percent slopes:

A1—0 to 10 inches, dark-brown (10YR 3/3) cherty silt loam; moderate, medium, granular structure; very friable; strongly acid; clear, smooth boundary.

B1—10 to 20 inches, brown (7.5YR 4/4) cherty silt loam; moderate, fine and medium, subangular blocky structure; friable; few clay films on ped faces and common clay films in pores; strongly acid; gradual, wavy boundary.

B21t—20 to 36 inches, brown (7.5YR 5/4) cherty silty clay loam; common, fine and medium, black streaks and stains; moderate, fine and medium, subangular blocky structure; friable; thin patchy clay films on peds and in pores; strongly acid; gradual, wavy boundary.

Figure 10.—Pasture on Dellrose cherty silt loam, 20 to 35 percent slopes.

B22t—36 to 54 inches, brown (7.5YR 5/4) cherty silty clay loam; common, fine and medium, black specks and stains; moderate, medium, subangular blocky structure; friable; patchy clay films; strongly acid; gradual, wavy boundary.

B23t—54 to 70 inches, strong-brown (7.5YR 5/6) cherty silty clay loam; profusely streaked with black and dark gray; weak, medium, subangular blocky structure; friable; patchy clay films; strongly acid.

The A horizon ranges from 6 to 12 inches in thickness. The B2 horizon is brown or strong-brown cherty silt loam or cherty silty clay loam. Each horizon is 15 to 30 percent angular chert fragments ½ inch to 4 inches in diameter. In most places there is a layer of yellowish clay at a depth of 3 to 8 feet. Depth to bedrock ranges from 6 to 15 feet. The content of phosphorus is medium to high. Reaction is strongly acid or medium acid.

Dellrose cherty silt loam, 20 to 35 percent slopes (DeE).—This is a well-drained, deep soil on hillsides. Except for the 6- to 12-inch surface layer, it has the profile described as representative for the series. This soil developed in material washed or rolled from soils derived from cherty limestone. It is 15 to 30 percent chert fragments ½ inch to 4 inches in diameter.

This soil is medium to high in phosphorus, is fertile, and is medium acid or strongly acid. The available water capacity is medium. Permeability is moderately rapid.

Under high level management, this soil is well suited to pasture (fig. 10). It is one of the best soils in the county for trees, especially poplar, locust, and walnut. About 80 percent of the acreage has been cleared and is used mainly for pasture. The areas adjacent to the Center Hill Lake, which are owned by the Corps of Engineers, are now idle and are reverting to forest. Areas of this fertile soil revert rapidly to locust trees and clearing is a problem in pasture management. Because this soil is steep and is above and below steep soils, it is difficult to work with farm machinery. Capability unit VIe–1; woodland group 2r8.

Dellrose cherty silt loam, 35 to 55 percent slopes (DeF).—This deep, well-drained soil is on hillsides. It developed in soil material, 3 to 10 feet thick, moved downslope from higher soils. It is 15 to 30 percent angular chert fragments ½ inch to 4 inches in diameter. The surface layer is dark-brown cherty silt loam 6 to 10 inches thick. The subsoil is brown or strong-brown, friable cherty silty clay loam or cherty silt loam.

The soil is medium to high in phosphorus and is strongly acid or medium acid throughout. The available water capacity is medium.

This soil is well suited to trees, particularly locust, poplar, and walnut. Most of the acreage was once cleared, but much of it is now idle or has reforested naturally. A few areas are used for pasture. Pasture is difficult to establish and maintain because the soil is too steep for the operation of machinery. Capability unit VIIe–1; woodland group 2r8.

Dickson Series

The Dickson series consists of moderately well drained soils on uplands of the Highland Rim. These soils have a fragipan. Slopes range from 0 to 5 percent.

In a representative profile the plow layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 24 inches, is yellowish-brown, friable silt loam. Below this is a layer of pale-brown silt loam about 3 inches thick. Between depths of 27 and 38 inches is a fragipan of brown silt loam that is mottled with yellowish brown and grayish brown and is hard and brittle when dry. Below the pan is mottled reddish-brown, pale-brown, and light-gray silty clay loam, and below this, yellowish-red clay mottled with yellowish brown.

Representative profile of Dickson silt loam, 2 to 5 percent slopes:

Ap—0 to 7 inches brown (10YR 4/3) silt loam; moderate, medium granular structure; very friable; medium acid; abrupt, smooth boundary.

B1—7 to 14 inches, yellowish-brown (10YR 5/4) silt loam; weak to moderate, medium and fine, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B21—14 to 24 inches, yellowish-brown (10YR 5/6) silt loam; moderate, medium and fine, subangular blocky structure; friable; very strongly acid; clear, wavy boundary.

A'2—24 to 27 inches, pale-brown (10YR 6/3) silt loam; few, medium, distinct mottles of yellowish brown (10YR 5/4) and grayish brown (10YR 5/2); few ped coatings of light grayish brown (2.5Y 6/2); weak, medium, platy structure parting to moderate, medium and fine, subangular blocky; friable; very strongly acid; clear, wavy boundary.

B'x—27 to 38 inches, brown (10YR 5/3) silt loam; common, medium faint mottles of yellowish brown (10YR 5/6) and grayish brown (10YR 5/2); moderate, fine, subangular blocky structure; friable when moist; hard and brittle when dry; patchy clay films; very strongly acid; clear, smooth boundary.

IIB22t—38 to 41 inches, mottled reddish-brown (5YR 5/4), pale-brown (10YR 6/3), and light-gray (10YR 6/1) silty clay loam; moderate, medium and fine, angular blocky structure; firm; patchy clay films; very strongly acid; clear, wavy boundary.

IIB23t—41 to 60 inches, yellowish-red (5YR 5/6) clay; few, medium, distinct mottles of yellowish brown (10YR 5/6); moderate, medium and fine, angular blocky structure; friable; discontinuous clay films; very strongly acid.

The Ap horizon ranges from 5 to 9 inches in thickness, is friable or very friable, and is brown, pale brown, or yellowish brown. The IIB2 horizon is silty clay loam or clay and contains varying amounts of chert fragments. Small chert fragments are common in some areas and make up less than 10 percent of the surface layer in some areas. Depth to the fragipan ranges from 20 to 34 inches. Cherty limestone bedrock is at a depth of about 12 to 20 feet or more. In unlimed areas, reaction is strongly acid or very strongly acid.

Dickson silt loam, 0 to 2 percent slopes (DkA).—This soil occupies broad areas on uplands of the Highland Rim. It is moderately well drained and has a fragipan that begins at a depth of about 27 inches. The surface layer is brown silt loam about 6 to 9 inches thick. The subsoil, to a depth of about 24 inches, is yellowish-brown silt loam. Below this is a fragipan of mottled brown, yellow, and gray silt loam about 12 inches thick. The fragipan is underlain by reddish silty clay loam or clay that contains varying amounts of chert fragments.

This soil is strongly acid or very strongly acid in unlimed areas. The uppermost 24 inches is easily penetrated by roots, water, and air. The fragipan restricts roots and slows the movement of water. Because drainage is slow through the fragipan, the soil is waterlogged during rainy periods. It is slightly droughty in summer.

This soil is easy to work. If well managed, it is moderately well suited to corn and other crops commonly grown. It is well suited to most commercial nursery plants. Alfalfa and other deep-rooted crops ordinarily last only

Figure 11.—**Nursery plants on Dickson silt loam, 2 to 5 percent slopes.**

2 or 3 years. Tobacco should be grown only where the slope is strong enough for surface drainage. The response to fertilizer and lime is good. Capability unit IIw–1; woodland group 3o7.

Dickson silt loam, 2 to 5 percent slopes (DkB).—This soil occupies areas 10 to 200 acres in size. It has the profile described as representative for the series. The surface layer is 5 to 8 inches thick.

This soil is very strongly acid or strongly acid in unlimed areas. Permeability is moderate above the fragipan. The pan retards further penetration of water and roots. Surface runoff is medium.

This soil is suited to most of the crops commonly grown. It is well suited to most commercial nursery plants (fig. 11) and is moderately well suited to corn and tobacco. Alfalfa ordinarily lasts only 2 or 3 years. The response to lime and fertilizer is good. Capability unit IIe–3; woodland group 3o7.

Dowellton Series

The Dowellton series consists of poorly drained soils on upland flats and benches in the Central Basin. These soils developed in residuum derived from limestone. Slopes range from 2 to 12 percent.

In a representative profile the surface layer is dark grayish-brown silt loam about 5 inches thick. The subsoil, about 43 inches thick, is grayish, firm, plastic silty clay and clay. Limestone bedrock is at a depth of 48 inches.

Representative profile of Dowellton silt loam, 2 to 12 percent slopes:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; few, fine, distinct mottles of strong brown; moderate, medium, granular structure; friable; medium acid; clear, smooth boundary.

B21tg—5 to 11 inches, light brownish-gray (2.5Y 6/2) silty clay or clay; common, medium, prominent mottles of brownish yellow (10YR 6/6); moderate, medium, angular and subangular blocky structure; firm; plastic; shiny ped faces; medium acid; clear, wavy boundary.

B22tg—11 to 35 inches, light-gray (5Y 6/1) clay; common, medium, distinct mottles of strong brown (7.5YR 5/6) and brownish yellow (10YR 6/6); moderate, medium and coarse, subangular blocky structure; firm; plastic; shiny ped faces; medium acid; gradual, wavy boundary.

B23tg—35 to 48 inches, light brownish-gray (2.5Y 6/2) clay; common, medium, distinct mottles of light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; firm; plastic; shiny ped faces; mildly alkaline.

R—48 inches, hard limestone bedrock.

The Ap horizon ranges from 5 to 10 inches in thickness. The phosphorus content ranges from low to high. Reaction ranges from very strongly acid through slightly acid as far down as the B23tg horizon. It is slightly acid through mildly alkaline in the B23tg horizon.

Dowellton silt loam, 2 to 12 percent slopes (DoC).—This poorly drained, gently sloping and sloping soil occupies areas 2 to 8 acres in size. Slopes are dominantly 5 to 12 percent but range from 2 to 12 percent.

Except for the layer just above the bedrock, this soil is slightly acid through strongly acid; the lower layer is slightly acid through mildly alkaline. Runoff is slow, and permeability is slow. The plastic, clayey subsoil restricts the growth of roots and slows drainage. This soil is wet in winter and spring and is droughty in summer. It cracks when dry.

This soil is suited to soybeans, sorghum, and other shallow-rooted crops that can be planted late in spring. It is also suited to white clover, tall fescue, or similar pasture plants that can withstand wetness in winter and spring. About 80 percent of the acreage has been cleared. Most of the cleared areas are used for pasture, but a few areas are used for small grain, corn, and silage crops. Capability unit IVe–3; woodland group 3w9.

Egam Series

The Egam series consists of moderately well drained, level soils on bottom land in the Central Basin. These soils developed in sediments washed from soils derived from phosphatic limestone. They are subject to occasional flooding in some places.

In a representative profile the surface layer, about 28 inches thick, is dark-brown to very dark grayish-brown silt loam in the upper part and is very dark gray silty clay loam in the lower part. The upper 10 inches of the subsoil is dark-brown, firm silty clay loam. Below this is dark-gray, firm silty clay loam mottled with grayish brown and very dark brown.

Representative profile of Egam silt loam:

Ap—0 to 8 inches, dark-brown (10YR 3/3) silt loam; moderate, medium, granular structure; friable; slightly acid; clear, smooth boundary.

A11—8 to 15 inches, very dark grayish-brown (10YR 3/2) heavy silt loam; moderate, medium, granular structure; friable; slightly acid; gradual, smooth boundary.

A12—15 to 28 inches, very dark gray (10YR 3/1) silty clay loam; moderate, medium, granular structure; firm; slightly acid; gradual, smooth boundary.

B2—28 to 38 inches, dark-brown (10YR 4/3) silty clay loam; common, medium, distinct mottles of grayish brown (10YR 5/2); moderate, medium, granular structure; firm; slightly acid; gradual, smooth boundary.

B3—38 to 56 inches, dark-gray (10YR 4/1) silty clay loam; common, medium, distinct mottles of grayish brown (10YR 5/2) and very dark brown (10YR 2/2); moderate, medium, granular structure; firm; neutral.

The A11 horizon is heavy silt loam or silty clay loam. The B horizon is most commonly silty clay loam but ranges to silty clay. The content of phosphorus is medium to high. Reaction ranges from medium acid through neutral.

Egam silt loam (Eg).—This moderately well drained, level soil is on bottom land. It formed in alluvium washed mainly from phosphatic limestone.

This soil is fertile. It is medium to high in phosphorus and medium acid through neutral in reaction. The available water capacity is high, runoff is slow, and permeability is moderately slow.

This soil is well suited to crops and pasture, and most of the acreage is used for those purposes. If well managed, it can be used intensively for crops. The hazard of flooding is a limitation in most places. Capability unit IIw–2; woodland group 2o7.

Ennis Series

The Ennis series consists of deep, well-drained, level soils along streams and small drainageways and in depressions on the Highland Rim. These soils developed in recent material washed from soils derived from cherty limestone and silty material. They are subject to occasional flooding in some places.

In a representative profile the surface layer is brown silt loam about 10 inches thick. The subsoil is dark yellowish-brown, friable silt loam about 25 inches thick. Below this is a layer of dark-brown, friable cherty silt loam about 10 inches thick. This layer is underlain by dark yellowish-brown, friable cherty silt loam. In most places there are chert fragments throughout the profile.

Representative profile of Ennis silt loam:

Ap—0 to 10 inches, brown (10YR 4/3) silt loam; moderate, medium and fine, granular structure; very friable; many roots; about 5 percent chert fragments as much as 3 inches in diameter; strongly acid; clear, smooth boundary.

B21—10 to 18 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, fine and medium, subangular blocky structure; friable; common fine roots; 10 percent chert fragments as much as 3 inches in diameter; strongly acid; clear, smooth boundary.

B22—18 to 35 inches, dark yellowish-brown (10YR 4/4) silt loam; few, fine, pale-brown (10YR 6/3) mottles; weak, fine and medium, subangular blocky structure; friable; few fine roots; about 12 percent chert fragments as much as 3 inches in diameter; strongly acid; clear, smooth boundary.

A1b—35 to 45 inches, dark-brown (10YR 4/3) cherty silt loam; moderate, medium, granular structure; friable; 30 percent chert fragments as much as 3 inches in diameter; strongly acid; clear, smooth boundary.

C—45 to 60 inches, dark yellowish-brown (10YR 4/4) cherty silt loam; few, fine and medium mottles of pale brown (10YR 6/3) and light brownish gray (10YR 6/2); massive; friable; 40 percent chert fragments as much as 3 inches in diameter; strongly acid.

The alluvium ranges from 5 to 10 feet in thickness and is underlain by stratified chert beds or bedrock. In some places the A and B horizons are as much as 35 percent chert fragments and the C horizon is as much as 45 percent. In unlimed areas, reaction is medium acid or strongly acid.

Ennis cherty silt loam (Eh).—This deep, well-drained, level soil has chert on the surface and throughout the profile. It occurs as narrow strips along the drainageways and in depressions on the Highland Rim. The plow layer is brown cherty silt loam. The subsoil is dark-brown and dark yellowish-brown, friable cherty silt loam.

This soil is medium acid or strongly acid. Because of the chert, it has only medium available water capacity. Permeability is moderately rapid.

This soil is suited to pasture plants and the commonly grown crops. Crops can be grown every year. In areas where flooding is a hazard, this soil is better suited to the annual crops that are grown in summer than to other

kinds of crops. The response to lime and fertilizer is good. Capability unit IIs–1; woodland group 2o7.

Ennis silt loam (En).—This soil occupies 3- to 15-acre tracts on bottom land on the Highland Rim. It has the profile described as representative for the series. Depth to chert beds or bedrock ranges from 5 to 10 feet.

In unlimed areas, this soil is medium acid or strongly acid. The available water capacity is high in most places, but in a few places where beds of chert are near the surface, it is much lower than is normal. Permeability is moderately rapid.

This soil is easy to work. It is well suited to row crops, pasture, and hay. If well managed, it can be used for cultivated crops every year. The response to management, especially to lime and fertilizer, is excellent. Scouring by floodwater is a hazard in places. Capability unit I–1; woodland group 2o7.

Etowah Series

The Etowah series consists of deep, well-drained soils on foot slopes, high terraces, benches, and fans. These soils developed in old alluvium washed mainly from soils that are underlain by limestone. Slopes are dominantly 2 to 12 percent. Chert fragments are on the surface in some places and occur throughout the soil.

In a representative profile the surface layer is dark-brown cherty silt loam about 6 inches thick. The upper 6 inches of the subsoil is brown cherty silt loam. Below this, to a depth of 65 inches, is strong-brown and yellowish-red cherty silty clay loam.

Representative profile of Etowah cherty silt loam, 2 to 12 percent slopes:

Ap—0 to 6 inches, dark-brown (10YR 3/3) cherty silt loam; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary.

B1—6 to 12 inches, brown (7.5YR 4/4) cherty silt loam; weak, fine and medium, subangular blocky structure; friable; strongly acid; clear, smooth boundary.

B21t—12 to 25 inches, strong-brown (7.5YR 5/6) to yellowish-red (5YR 5/6) cherty silty clay loam; moderate, fine and medium, subangular blocky structure; friable; thin clay films on ped faces; strongly acid; clear, wavy boundary.

B22t—25 to 32 inches, strong-brown (7.5YR 5/6) cherty silty clay loam; moderate, medium, subangular blocky structure; friable; clay films of reddish brown (5YR 4/3); strongly acid; clear, smooth boundary.

B3t—32 to 65 inches, yellowish-red (5YR 5/6) cherty silty clay loam; common, fine, distinct mottles of light yellowish brown (10YR 6/4); moderate, medium, subangular blocky structure; firm; patchy clay films; strongly acid.

The Ap horizon ranges from 6 to 9 inches in thickness. The B2 horizon is strong brown, yellowish red, or reddish brown. The solum is more than 60 inches thick. Depth to bedrock ranges from 6 to 20 feet or more. In unlimed areas, reaction is strongly acid or very strongly acid in each horizon.

Etowah cherty silt loam, 2 to 12 percent slopes (EtC).—This is a well-drained, gently sloping and sloping soil on high terraces, foot slopes, benches, and fans. It developed in old cherty alluvium. Its profile is the one described as representative for the series. The subsoil is 15 to 25 percent chert fragments.

Included with this soil in mapping are a few areas of soils that have a yellowish-brown subsoil and a few that have slopes of 12 to 20 percent.

This soil has a deep root zone. It is strongly acid in unlimed areas. Permeability is moderate, runoff is medium, and the available water capacity is medium. Tilth is good.

This soil is easy to work. If well managed, it is suited to small grain, tobacco, orchardgrass, tall fescue, and to most of the other crops commonly grown in the county. It is not so well suited to hay crops because chert fragments on the surface interfere with mowing. Capability unit IIe–2; woodland group 2o7.

Etowah silt loam, 2 to 5 percent slopes (EwB).—This soil occupies small tracts on foot slopes, high terraces, benches, and fans on the Highland Rim. It has a surface layer of dark-brown, friable silt loam 6 to 8 inches thick. The subsoil is dominantly strong-brown to yellowish-red silty clay loam several feet thick. Depth to bedrock ranges from 6 to 20 feet.

Included with this soil in mapping are a few areas of soils that have a yellowish-brown subsoil and a few that have slopes of less than 2 percent.

In unlimed areas, this soil is strongly acid or very strongly acid throughout. It has high available water capacity.

This soil is easy to work and to keep in good tilth. If adequately limed, fertilized, and otherwise well managed, it is suited to all crops commonly grown. It is used for many kinds of crops and for pasture, but much of the acreage is used for corn and tobacco. The response to fertilization and other management is good. Capability unit IIe–1; woodland group 2o7.

Fullerton Series

The Fullerton series consists of deep, well-drained soils. These soils developed in residuum derived from cherty limestone. Slopes range from 5 to 25 percent. Chert fragments, ½ inch to 4 inches in diameter, are on the surface and throughout the profile.

In a representative profile the surface layer is brown cherty silt loam about 8 inches thick. The upper 10 inches of the subsoil is yellowish-red, firm cherty silty clay loam mottled with light yellowish brown. Below this, to a depth of about 60 inches, is yellowish-red and red, firm cherty clay.

Representative profile of Fullerton cherty silt loam, 5 to 12 percent slopes, eroded:

Ap—0 to 8 inches, brown (10YR 4/3) cherty silt loam; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary.

B21t—8 to 18 inches, yellowish-red (5YR 5/6) cherty silty clay loam; common, medium, distinct mottles of light yellowish brown (10YR 6/4); moderate, medium, subangular blocky structure; firm; common clay films; strongly acid; clear, wavy boundary.

B22t—18 to 28 inches, yellowish-red (5YR 4/6) cherty clay; common, medium, distinct mottles of light yellowish brown (10YR 6/4); moderate, medium, subangular blocky structure; firm; common clay films; strongly acid; clear, wavy boundary.

B23t—28 to 60 inches, red (2.5YR 4/6) cherty clay; common, medium, distinct mottles of yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6); moderate, medium, subangular blocky structure; firm; common clay films; strongly acid.

The Ap horizon ranges from 4 to 9 inches in thickness. The B21t horizon is yellowish-brown, strong-brown, or yellowish-red cherty silt loam or cherty silty clay loam. The B22t and

B23t horizons are yellowish red or red. Each horizon is 15 to 35 percent chert fragments ¼ inch to 4 inches in diameter. Depth to limestone bedrock or to chert beds ranges from 6 to 30 feet. In unlimed areas, reaction is strongly acid or very strongly acid.

Fullerton cherty silt loam, 5 to 12 percent slopes, eroded (FuC2).—This soil occurs mainly on ridgetops and occupies tracts 5 to 15 acres in size. It has the profile described as representative for the series (fig. 12). It is cherty throughout; the chert fragments range from ¼ inch to 4 inches in diameter and make up 15 to 30 percent of the soil mass.

Included with this soil in mapping are many small eroded spots of a soil that has a surface layer of reddish cherty silt loam or cherty silty clay loam.

This soil is strongly acid or very strongly acid. It is highly leached. Permeability is moderate, and the available water capacity is medium.

This soil is only moderately well suited to the crops commonly grown in the county. It is better suited to small grains and to pasture and hay than to corn, tobacco, and other row crops. Because the soil is cherty and clayey, there is not enough water available during dry periods. Capability unit IIIe–2; woodland group 3o7.

Figure 12.—**Profile of Fullerton cherty silt loam, 5 to 12 percent slopes, eroded.**

Fullerton cherty silt loam, 12 to 25 percent slopes, eroded (FuD2).—This well-drained, cherty soil is on hillsides of the highly dissected part of the Highland Rim. The plow layer, 4 to 8 inches thick, is brown cherty silt loam. The upper part of the subsoil, 8 to 10 inches thick, is yellowish-brown or strong-brown, firm cherty silty clay loam, and the lower part is yellowish-red or red, firm cherty clay.

Included with this soil in mapping are a few severely eroded areas of soils that have a redder and finer textured surface layer and a few small areas where slopes are 25 to 30 percent.

In unlimed areas, this Fullerton soil is strongly acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is medium. The root zone is deep.

Because of the slope, this soil is poorly suited to row crops, even if they are grown in a long cropping system. The slope, chert fragments, and limited water supply restrict its use to pasture and an occasional small grain or hay crop. If limed, fertilized, and otherwise well managed, this soil is moderately well suited to the pasture plants commonly grown in the county. The response to fertilization and other management is fair to good. Almost all of the acreage was once cleared and used for cultivated crops. About 50 percent is now pastured, 30 percent is idle or is reverting to woodland, and 20 percent is used for cultivated crops. Capability unit VIe–2; woodland group 3o7.

Gullied Land

Gullied land (Gd) occurs as small tracts that are from 40 to 100 percent gullied (fig. 13). The gullies are deep and 5 to 50 feet wide. Between the gullies are remnants of the original soils, mainly those of the Christian and Waynesboro series. Erosion has removed all of the original surface layer and much of the subsoil. Slopes range from 10 to 40 percent. The soil material is highly variable in color, texture, consistence, and content of chert. It is strongly acid or very strongly acid throughout and is low in fertility. The available water capacity is low, runoff is very rapid, and permeability is generally slow.

Most of these gullied areas have been planted to pines, or have sparsely reforested naturally. A few areas are idle or are used occasionally for pasture.

Most areas of Gullied land are better suited to trees than to other uses. Some of the less eroded and less sloping areas can be reclaimed and used for pasture, but the cost of reclamation is very high. Capability unit VIIe–1; no woodland group.

Guthrie Series

The Guthrie series consists of poorly drained, grayish soils that occur in level or depressional areas on the Highland Rim. These soils have a fragipan at a depth of about 30 inches.

In a representative profile the surface layer is very dark gray and light brownish-gray silt loam about 12 inches thick. The upper 18 inches of the subsoil is light brownish-gray, friable silt loam mottled with light yellowish brown.

Figure 13.—Typical area of Gullied land.

Below this is a fragipan of grayish, firm silt loam and silty clay loam that extends to a depth of about 60 inches and is mottled with yellowish brown and strong brown.

Representative profile of Guthrie silt loam:

A1—0 to 1 inch, very dark gray (10YR 3/1) silt loam; weak, fine, granular structure; very friable; strongly acid.

A2—1 to 12 inches, light brownish-gray (2.5Y 6/2) silt loam; few, medium, distinct mottles of light yellowish brown (2.5Y 6/4); weak, fine, granular structure; friable; very strongly acid; gradual, smooth boundary.

B2g—12 to 30 inches, light brownish-gray (2.5Y 6/2) silt loam; common, medium, distinct mottles of brownish yellow (10YR 6/6); weak, medium, subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

Bx1—30 to 40 inches, light brownish-gray (2.5Y 6/2) heavy silt loam or silty clay loam; common, medium, distinct mottles of yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6); moderate, medium, subangular and angular blocky structure; firm; slightly brittle; discontinuous clay films; very strongly acid; gradual, smooth boundary.

Bx2—40 to 60 inches, gray (10YR 6/1) and light brownish-gray (2.5Y 6/2) silty clay loam; common, medium, prominent mottles of yellowish brown (10YR 5/6); moderate, medium, angular and subangular blocky structure; firm; slightly brittle; discontinuous clay films on ped faces; very strongly acid.

The depth to the fragipan averages about 30 inches but ranges from 20 to 40 inches. The Bx horizon, or the fragipan, is silt loam or silty clay loam. Depth to limestone bedrock ranges from 10 to 30 feet. Reaction is strongly acid or very strongly acid throughout.

Guthrie silt loam (Gu).—This poorly drained, level soil has a fragipan. It is commonly called "buckshot land" and "white land." Areas range from 10 to 30 acres in size.

In unlimed areas, this soil is strongly acid or very strongly acid. The subsoil is poorly aerated and slowly permeable. Runoff is very slow, and ponding is common in many places, especially during wet periods. During long dry periods, the soil is droughty and the subsoil becomes hard and dry.

Unless drainage is provided, this soil is poorly suited to most crops. It is better suited to tall fescue (fig. 14), white clover, common lespedeza, and soybeans than to other crops. Nearly all the acreage is wooded or pastured. A very small acreage is used for corn, soybeans, and other cultivated crops. This soil is generally too wet to work before early in summer. Drainage outlets are not available in many areas. Capability unit IVw-1; woodland group 2w9.

Figure 14.—Tall fescue on Guthrie silt loam.

Hampshire Series

The Hampshire series consists of well-drained soils on uplands in the outer part of the Central Basin. These soils developed in residuum derived from phosphatic limestone or interbedded phosphatic limestone and shale. Slopes range from 5 to 30 percent.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil is brown, firm silty clay loam in the uppermost 5 inches; strong-brown, firm clay in the middle part; and strong-brown, firm clay loam in the lowermost part. Below this is strong-brown loam. Interbedded, soft and hard shale and limestone is at a depth of about 50 inches.

Representative profile of Hampshire silt loam, 5 to 12 percent slopes, eroded:

Ap—0 to 7 inches, brown (10YR 4/3) silt loam; moderate, medium, granular structure; friable; strongly acid; clear, wavy boundary.

B1t —7 to 12 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium and fine, subangular blocky structure; firm; thin discontinuous clay films; few soft shale and limestone fragments; strongly acid; clear, wavy boundary.

B21t—12 to 24 inches, strong-brown (7.5YR 5/6) clay; moderate, medium and fine, subangular blocky structure; firm; thick continuous clay films; small soft shale and limestone fragments coated with clay films; strongly acid; gradual, wavy boundary.

B22t—24 to 30 inches, strong-brown (7.5YR 5/6) clay; moderate, medium and fine, subangular blocky structure; firm; thick continuous clay films; few soft shale and limestone fragments; strongly acid; clear, wavy boundary.

B3t—30 to 40 inches, strong-brown (7.5YR 5/6) clay loam; moderate, medium, subangular blocky structure; firm; thin patchy clay films; about 15 percent is soft shale and limestone fragments; strongly acid; clear, wavy boundary.

C—40 to 50 inches, strong-brown (7.5YR 5/6) loam that extends into seams and cracks of soft interbedded shale and limestone; strongly acid; gradual, smooth boundary.

R—50 inches, interbedded, soft and hard shale and limestone; few strong-brown and yellowish-red clay coats on some rock fragments.

The Ap horizon ranges from 4 to 8 inches in thickness and in places contains weathered limestone fragments. In places there are a few chert fragments of siltstone, shale, or limestone on the surface and throughout the solum. The B horizon is yellowish brown, brown, or strong brown. In some areas the B2, B3, and C horizons are mottled with shades of yellow and brown. The B3t and C horizons are most commonly clay loam or loam but range to silty clay loam and clay. Coarse fragments range from a few to as much as 90 percent of the C horizon. Depth to hard rock ranges from about 3 to 6 feet. In unlimed areas, reaction is very strongly acid or strongly acid in each horizon. The phosphorus content ranges from medium to high.

Hampshire silt loam, 5 to 12 percent slopes, eroded (HhC2).—This well-drained, rolling soil is on uplands in the outer part of the Central Basin. It has the profile described as representative for the series. The surface layer ranges from 5 to 8 inches in thickness, and depth to bedrock ranges from 3 to 6 feet. Fragments of weathered limestone and siltstone are common on the surface and throughout the profile.

Included with this soil in mapping are a few areas of a severely eroded soil that has a surface layer of silty clay loam.

This Hampshire soil is very strongly acid or strongly acid throughout and is medium to high in phosphorus. Permeability is moderate, and the available water capacity is medium.

If well managed, this soil is moderately well suited to crops and pasture. It is better suited to small grains, grasses, and legumes than to annual crops that are grown in summer. Most of the acreage is used for crops and pasture. Orchardgrass, tall fescue, alfalfa, red clover, and white clover are suitable pasture and hay plants. Capability unit IVe–2; woodland group 3o7.

Hampshire silt loam, 12 to 20 percent slopes, eroded (HhD2).—This well-drained soil is on the hilly parts of uplands in the outer part of the Central Basin. It has a surface layer of brown silt loam 5 to 8 inches thick. The subsoil, to a depth of 25 to 30 inches, is dominantly strong-brown, firm clay. Below this it ranges from loam to clay and contains shale and limestone fragments. Depth to bedrock is about 45 inches. In some places brown or light yellowish-brown mottles are at a depth of more than 24 inches.

Included with this soil in mapping are a few patches of a severely eroded soil that has a surface layer of yellowish-brown silty clay loam and areas where limestone flags and chert fragments are on the surface and throughout the profile.

This soil is medium to high in phosphorus and is strongly acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is medium.

Because of the slope, the clay subsoil, and the hazard of erosion, this soil is better suited to permanent pasture and hay than to cultivated crops. Most of the acreage is used for pasture or is idle. Capability unit VIe–2; woodland group 3o7.

Hampshire silt loam, 20 to 30 percent slopes, eroded (HhE2).—This well-drained, steep and rolling soil is on side slopes below ridgetops in the outer part of the Central Basin. It has a surface layer of brown silt loam 4 to 6 inches thick. The subsoil is dominantly yellowish-brown or strong-brown, firm clay in the upper part and ranges from loam to clay in the lower part. In many places the subsoil is mottled with light yellowish brown. Depth to bedrock averages 40 inches.

Included with this soil in mapping are some areas of soils that have outcrops of bedrock and a few areas where limestone flags and chert fragments are common on the surface and throughout the profile. Also included, in most areas, are small patches of severely eroded soils that have a silty clay loam surface layer.

This soil is very strongly acid or strongly acid and is medium to high in phosphorus. Permeability is moderate, and the available water capacity is medium.

Because of the slope, this soil is better suited to permanent pasture than to other uses. Nearly all the acreage is used for pasture, is idle, or has reseeded to trees of low quality. A few areas are used for grain. Capability unit VIe–2; woodland group 3r8.

Hicks Series

The Hicks series consists of deep, well-drained, rolling soils on ridgetops in the outer part of the Central Basin. These soils developed in loess about 2 feet thick underlain by residuum from phosphatic limestone and shale. Slopes range from 5 to 12 percent.

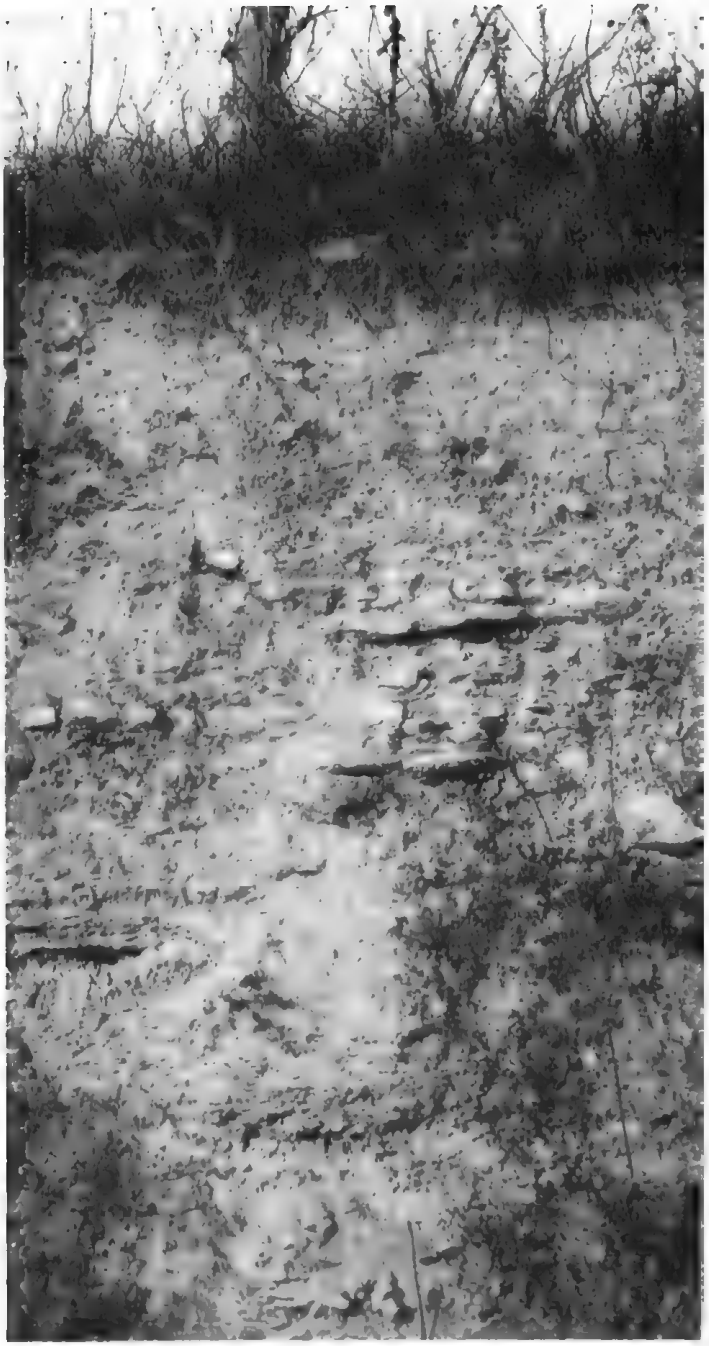

Figure 15.—**Profile of Hicks silt loam, 5 to 12 percent slopes. The upper 2 feet of this soil is loamy and nearly free of rock fragments.**

In a representative profile the surface layer is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 56 inches. It is yellowish-brown, friable silt loam in the uppermost part; yellowish-brown, friable silty clay loam in the middle part; and brown, friable clay loam in the lowermost part. The lowermost 26 inches is mottled with light yellowish brown and contains sandy limestone fragments. Hard, phosphatic limestone bedrock is at a depth of about 56 inches.

Representative profile of Hicks silt loam, 5 to 12 percent slopes:

Ap—0 to 8 inches, brown (10YR 5/3) silt loam; moderate, medium, granular structure; very friable; strongly acid; clear, smooth boundary.

B1—8 to 12 inches, yellowish-brown (10YR 5/4) silt loam; weak, medium, subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B21t—12 to 30 inches, yellowish-brown (10YR 5/6) silty clay loam; moderate, medium, subangular blocky structure; friable; thin discontinuous clay films; few, fine, black concretions; strongly acid; clear, wavy boundary.

IIB22t—30 to 36 inches, yellowish-brown (10YR 5/4) silty clay loam; common, medium and fine, faint mottles of light yellowish brown (10YR 6/4); weak, medium, subangular blocky structure; friable; thin patchy clay films; 10 percent weathered, sandy limestone fragments; few, fine, black concretions; strongly acid; clear, wavy boundary.

IIB3—36 to 56 inches, brown (7.5YR 4/4) clay loam; common, medium, distinct mottles of light yellowish brown (10YR 6/4); weak, coarse, subangular blocky structure; friable; 35 percent soft and hard, sandy limestone fragments; strongly acid.

R—56 inches, hard, phosphatic limestone bedrock.

The Ap horizon ranges from 6 to 9 inches in thickness. A few, small, weathered sandy fragments are in the Ap, B1, and B21t horizons in some places. The B21t and IIB22t horizons are silt loam or silty clay loam. The IIB3 horizon is about 45 percent coarse fragments. In unlimed areas, reaction ranges from very strongly acid through slightly acid in the IIB3 horizon and is strongly acid or very strongly acid in the rest of the soil. Depth to bedrock ranges from 4 to 6 feet.

Hicks silt loam, 5 to 12 percent slopes (HkC).—This deep, well-drained soil occupies small areas on ridgetops in the outer part of the Central Basin (fig. 15).

Included with this soil in mapping are areas of soils that have a few, partly weathered, sandy fragments in the upper part of the profile; the fragments commonly increase in number with increasing depth.

In unlimed areas, reaction is strongly acid or very strongly acid except in the layer just above the bedrock; reaction in this layer ranges from very strongly acid through slightly acid. Permeability is moderate, and the available water capacity is medium or high. This soil is medium or high in phosphorus, but it is low in other plant nutrients.

This soil is easy to work and is well suited to the crops commonly grown in the county. The response to management is good. Most of the acreage is used for pasture, but a considerable acreage is used for crops. Capability unit IIIe–1; woodland group 3o7.

Inman Series

The Inman series consists of well-drained soils on hillsides in the outer part of the Central Basin. These soils developed in material weathered from interbedded shale, siltstone, and phosphatic limestone. Slopes range from 12 to 30 percent.

In a representative profile the surface layer is dark grayish-brown flaggy silt loam about 5 inches thick. The subsoil is about 7 inches of yellowish-brown, firm clay and fragments of limestone. The underlying material is brown, firm flaggy silty clay mottled with light yellowish brown and yellowish brown. Shaly limestone bedrock is at a depth of about 31 inches.

Representative profile of Inman flaggy silt loam, 12 to 30 percent slopes:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) flaggy silt loam; moderate, medium, granular structure; friable; 15 percent fragments of limestone as much as 1 inch thick and 5 inches long; slightly acid; clear, smooth boundary.

B—5 to 12 inches, yellowish-brown (10YR 5/4) clay; moderate, medium, angular and subangular blocky structure; firm; about 10 percent fragments of limestone as much as 2 inches thick and 5 inches long; slightly acid; clear, wavy boundary.

C—12 to 31 inches, brown (10YR 5/3) flaggy silty clay; common, medium, faint mottles of light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6); platy, horizontal rock structure; firm; 30 percent fragments of soft and hard limestone as much as 2 inches thick and 10 inches long; slightly acid; gradual, wavy boundary.

R—31 inches, horizontally bedded, hard and soft, phosphatic, shaly limestone.

A thin Bt horizon is common in some areas. Soft and hard limestone flagstones and shale fragments occur throughout the profile in most areas; they make up from a few to 35 percent of the soil mass. Generally, they increase in number and size with increasing depth. The phosphorus content ranges from medium to high in each horizon. Reaction ranges from strongly acid through neutral in the A and B horizons and from slightly acid through mildly alkaline in the C horizon. Depth to bedrock is 2 to 5 feet.

Inman flaggy silt loam, 12 to 30 percent slopes, eroded (InE2).—This flaggy soil is on hillsides in the outer part of the Central Basin. It has a clayey subsoil. Fragments of limestone 5 to 10 inches long and 1 or 2 inches thick make up almost one-third of the soil mass. Depth to bedrock ranges from 2 to 5 feet.

This soil is high in phosphorus. Permeability is moderately slow, and the available water capacity is low.

This soil is better suited to permanent pasture or trees than to other uses. Most of the acreage is used for pasture or is idle. Because of the slope and the fine-textured subsoil, the soil generally is in poor tilth and is difficult to work. Fragments on the surface interfere with tillage. Capability unit VIe–2; woodland group 3r8.

Lobelville Series

The Lobelville series consists of moderately well drained, level soils on first bottoms along small streams. These soils developed in sediments recently washed from soils derived from cherty limestone and loamy material.

In a representative profile the surface layer is brown cherty silt loam about 8 inches thick. The subsoil is brown, very friable and friable cherty silt loam that is about 47 inches thick and mottled with brown and light brownish gray. The underlying material is mottled, light brownish-gray and brown cherty silt loam.

Representative profile of Lobelville cherty silt loam:

Ap—0 to 8 inches, brown (10YR 4/3) cherty silt loam; moderate, medium, granular structure; very friable; strongly acid; clear, smooth boundary.

B21—8 to 13 inches, brown (10YR 4/3) cherty silt loam; common, medium, faint mottles of brown (10YR 5/3); moderate, medium, granular structure; very friable; about 10 to 20 percent small chert fragments; strongly acid; clear, smooth boundary.

B22—13 to 25 inches, brown (10YR 5/3) cherty silt loam; common, coarse, faint mottles of light brownish gray (10YR 6/2), and few, fine, faint mottles of dark yellowish brown; moderate, medium, granular structure; friable; many dark-colored stains and small concretions; about 15 to 20 percent chert fragments; strongly acid; clear, smooth boundary.

B23—25 to 55 inches, brown (10YR 4/3) cherty silt loam; common, medium, faint mottles of light brownish gray (10YR 6/2); moderate, medium, granular structure; friable; many concretions and dark-colored stains; about 30 to 40 percent chert fragments; strongly acid; gradual, wavy boundary.

C—55 to 60 inches, mottled light brownish-gray (10YR 6/2) and brown (10YR 4/3) cherty silt loam; 45 to 60 percent chert fragments; massive; medium acid.

The Ap horizon ranges from brown through dark grayish brown, and the B horizon from brown to dark brown. The depth to gray mottles averages 18 inches but ranges from 15 to 24 inches. Reaction is medium acid or strongly acid. Chert fragments, as much as 3 inches in diameter, make up 2 to 25 percent of the soil mass in the upper 4 feet of the profile and as much as 65 percent below that depth.

Lobelville cherty silt loam (lb).—This moderately well drained, level, cherty soil is on first bottoms. It has the profile described as representative for the series.

This soil is medium acid or strongly acid. Runoff is slow, permeability is moderate, and the available water capacity is medium.

This soil is well suited to corn, soybeans, grain sorghum, lespedeza, tall fescue, white clover, and sudangrass. It is poorly suited to alfalfa and tobacco because flooding or ponding is likely. Row crops can be grown every year if lime and large amounts of fertilizer are applied and crop residue is plowed under. Growth of most crops is good in years of normal rainfall but is not good in drier years because the soil does not hold enough moisture for plants. Capability unit IIs–1; woodland group 2w8.

Lobelville silt loam (le).—This moderately well drained, level soil is on first bottoms along small streams on the Highland Rim. In some places the surface layer and the subsoil are as much as 10 percent chert fragments.

In unlimed areas, this soil is medium acid or strongly acid. Permeability is moderate. A high water table generally keeps the soil saturated for fairly long periods in winter and spring. Flooding and ponding are common but for only short periods.

This soil is easy to work. It is well suited to corn, soybeans, tall fescue, and white clover. Because of inadequate drainage and occasional flooding, it is poorly suited to alfalfa and tobacco. Crops can be grown every year. The response to management is good. Most of the acreage is used for pasture of tall fescue and white clover. Good pasture can be maintained, even during the drier part of the growing season. Capability unit I–1; woodland group 2w8.

Lynnville Series

The Lynnville series consists of deep, moderately well drained, level soils on first bottoms in the Central Basin. These soils developed in sediments recently washed from soils derived mainly from phosphatic limtestone.

In a representative profile the surface layer is dark-brown silt loam about 18 inches thick. The subsoil, to a depth of 42 inches, is brown and dark-brown, friable silt loam mottled with grayish brown. Between depths of 42 and 58 inches, the subsoil is brown silty clay loam mottled with pale brown and grayish brown.

Representative profile of Lynnville silt loam:

Ap—0 to 8 inches, dark-brown (10YR 3/3) silt loam; moderate, medium, granular structure; very friable; neutral; abrupt, smooth boundary.

A1—8 to 18 inches, dark-brown (10YR 3/3) silt loam; few, fine, faint mottles of brown (10YR 4/3); moderate, medium, granular structure; very friable; neutral; clear, smooth boundary.

B2—18 to 27 inches, brown (10YR 4/3) silt loam; common, medium, faint mottles of grayish brown (10YR 5/2); weak, medium, granular structure; very friable; few dark concretions; few chert fragments; neutral; clear, smooth boundary.

A1b—27 to 42 inches, dark-brown (10YR 3/3) silt loam; many, medium, distinct mottles of grayish brown (10YR 5/2); moderate, medium, granular structure; friable; few dark concretions; few chert fragments; neutral; clear, smooth boundary.

B2b—42 to 58 inches, brown (10YR 4/3) silty clay loam; common, medium, distinct mottles of pale brown (10YR 6/3) and grayish brown (10YR 5/2); moderate, medium, granular structure; many dark concretions; many chert fragments; neutral.

The B2b horizon is silty clay loam or silt loam. A few chert fragments may occur in any horizon. The content of phosphorus is high. Reaction ranges from medium acid through neutral. Depth to limestone ranges from about 4 to 6 feet.

Lynnville silt loam (ly).—This deep, moderately well drained, level soil is on first bottoms. In a few areas chert fragments commonly occur in the surface layer and the subsoil.

This soil is high in phosphorus and is medium acid through neutral. It is fertile and is generally in good tilth. The organic-matter content is moderately high. The available water capacity is high. Runoff is slow, and some areas are subject to ponding for short periods. A high water table keeps the soil saturated for short periods in winter and spring.

This soil is well suited to the commonly grown crops and to intensive use. Nearly all the acreage is used for crops and pasture. The response to management is excellent. Crops may be damaged by flooding or ponding in a few of the lower areas. Capability unit I–1; woodland group 2w8.

Mimosa Series

The Mimosa series consists of well-drained soils on uplands on the lower side slopes and the low ridges in the outer part of the Central Basin. These soils developed in residuum derived from phosphatic limestone. Slopes range from 2 to 40 percent.

In a representative profile the surface layer is dark-brown silt loam about 6 inches thick. The subsoil is brown and strong-brown, firm clay about 41 inches thick. The underlying material is mottled strong-brown, brownish-yellow, and very dark gray, very firm clay. Limestone rock is at a depth of about 51 inches.

Representative profile of Mimosa silt loam, 2 to 5 percent slopes:

Ap—0 to 6 inches, dark-brown (10YR 3/3) silt loam; moderate, medium, granular structure; friable; common fine and medium roots; few small chert fragments; strongly acid; abrupt, wavy boundary.

B21t—6 to 14 inches, brown (7.5YR 4/4) clay; strong, medium, subangular blocky structure; firm; continuous clay films; common fine roots; few chert fragments 1 to 2 inches in diameter; few dark-brown concretions; very strongly acid; gradual, smooth boundary.

B22t—14 to 23 inches, strong-brown (7.5YR 5/6) clay; strong, medium and fine, subangular blocky structure; firm; continuous clay films; few fine roots; few chert fragments; very strongly acid; clear, smooth boundary.

B23t—23 to 34 inches, strong-brown (7.5YR 5/8) clay; common, medium, distinct mottles of yellowish brown (10YR 5/4) and pale brown (10YR 6/3); moderate, medium, subangular blocky structure; firm; continuous clay films; many dark-brown concretions 1 or 2 millimeters in size; few chert fragments; very strongly acid; clear, smooth boundary.

B24t—34 to 41 inches, strong-brown (7.5YR 5/8) clay; common, medium, distinct mottles of brown (10YR 4/3), pale brown (10YR 6/3), and yellowish brown (10YR 5/6); moderate, medium, subangular blocky structure; firm; discontinuous clay films; many dark-brown concretions; many black stains; very strongly acid; clear, smooth boundary.

B3t—41 to 47 inches, yellowish-brown (10YR 5/8) clay; common, medium, faint mottles of light yellowish brown (10YR 6/4); weak to moderate, fine, subangular blocky structure; firm; few discontinuous clay films; many dark-brown concretions; many black stains; few chert fragments; very strongly acid; gradual, smooth boundary.

C—47 to 51 inches, mottled strong-brown (7.5YR 5/6), brownish-yellow (10YR 6/6), and very dark gray (10YR 3/1) clay; weak, medium and coarse, subangular blocky structure to massive; very firm; common, fine, dark-brown concretions; neutral.

R—51 inches, phosphatic limestone rock.

The Ap horizon is dark-brown or brown silt loam, silty clay loam, or clay. It ranges from 4 to 9 inches in thickness. The B horizon is brown, yellowish brown, or strong brown. Mottles occur below a depth of about 24 inches. In unlimed areas, reaction is strongly acid or very strongly acid in the A and B horizons and is very strongly acid through neutral in the C horizon. Depth to bedrock ranges from 2 to 5 feet.

Mimosa very rocky soils, 5 to 20 percent slopes (MmD).—These soils are on uplands in the outer part of the Central Basin. Outcrops of limestone bedrock cover 10 to 25 percent of each area. The soil between the outcrops has a surface layer of brown or dark-brown silty clay loam or clay a few inches thick and a subsoil of yellowish-brown, firm clay about 24 to 60 inches thick.

Because permeability is moderately slow and runoff is medium or rapid, these soils are highly susceptible to erosion. They are low in available water capacity and are droughty. They are high in phosphorus. Generally they are very strongly acid or strongly acid in the upper part of the profile and medium acid through neutral in the layer next to the rock. The clayey subsoil and the bedrock limit the penetration of roots.

These soils are suited to pasture and trees. Most of the acreage was once cleared, but many areas are now reverting to woodland. The trees are mainly redcedar, locust, and hickory. Most wooded areas are grazed; they produce a small amount of pasture grass in spring (fig. 16). The rock outcrops make tillage impractical and pasture management difficult. Capability unit VIs–1; woodland group 4x3.

Mimosa very rocky soils, 20 to 40 percent slopes (MmF).—These soils occur mainly on south-facing, convex slopes in the outer part of the Central Basin. Outcrops of limestone cover about 10 to 25 percent of the surface of each area. In most places the soil between the rock outcrops has a thin surface layer of dark-brown silty clay loam or clay and a subsoil of yellowish-brown, firm clay 24 to 60 inches thick.

In unlimed areas, these soils are generally very strongly acid or strongly acid in the upper part of the profile and are medium acid to neutral in the layer next to the rock. They are high in phosphorus. Permeability is moderately slow, and the available water capacity is low.

These soils are extensive in the county. Because of the slope, the rock outcrops, and the severe hazard of erosion,

Figure 16.—**Very rocky Mimosa soils provide a small amount of grazing, but most of the pasture growth is in spring when moisture is plentiful.**

they are not suited to crops and are poorly suited to pasture. Fair permanent pasture can be grown under high level management in some areas, but most of the acreage is better suited to trees. About 80 percent of the acreage has been cleared. The cleared areas are now used for unimproved pasture, are reverting to woodland, or are idle. The trees in wooded areas are eastern redcedar, locust, oak, and hickory. Capability unit VIIs–1; woodland group 4x3.

Mimosa cherty silt loam, 5 to 12 percent slopes, eroded (MnC2).—This well-drained soil is on uplands in the outer part of the Central Basin. It developed in residuum derived from phosphatic limestone. Most of the chert fragments are in the surface layer; they rolled or washed from higher cherty soils. The surface layer is dark-brown or yellowish-brown cherty silt loam about 4 to 8 inches thick. The subsoil is yellowish-brown or strong-brown, firm clay. Depth to bedrock ranges from about 2 to 5 feet.

Included with this soil in mapping are areas of a soil that has a surface layer of cherty silty clay loam. Also included are many areas, especially near Rock land, in which rock outcrops are common.

This Mimosa soil is medium or high in phosphorus. In unlimed areas, it is very strongly acid or strongly acid in the upper part of the profile and is medium acid through neutral in the layer next to the rock. Runoff is medium or rapid, permeability is moderately slow, and the available water capacity is medium.

This soil is suited to pasture and is moderately suited to most of the commonly grown crops. It is better suited to small grains, pasture plants, and other crops that grow fast in spring than to corn, tobacco, and other crops that require large amounts of water in summer. Most of the acreage is used for crops and pasture. Capability unit IVe–2; woodland group 3o7.

Mimosa cherty silt loam, 12 to 20 percent slopes, eroded (MnD2).—This soil is on the lower side slopes of ridges commonly below the Dellrose soils. The surface layer is most commonly dark-brown cherty silt loam about 4 to 7 inches thick. The subsoil is strong-brown or yellowish-brown, firm clay. Depth to limestone bedrock ranges from 2 to 5 feet.

Included with this soil in mapping are areas of a soil that has a surface layer of dark-brown or yellowish-brown cherty silty clay loam and small areas of limestone outcrops.

This soil is medium or high in phosphorus. It is strongly acid or very strongly acid in the upper part of the profile and is medium acid through neutral in the layer just above the bedrock. Permeability is moderately slow, runoff is medium or rapid, and the available water capacity is medium.

This soil is well suited to pasture plants and to most hay crops, but it is poorly suited to cultivated crops because of the slope. About 80 percent of the acreage has been cleared. Most of the cleared areas are used for pasture, but some areas are idle and are reverting to woodland. The trees in these areas are eastern redcedar, locust, and mixed hardwoods. Capability unit VIe–2; woodland group 3o7.

Mimosa cherty silt loam, 20 to 30 percent slopes, eroded (MnE2).—This cherty soil is on long slopes below the Dellrose and Bodine soils in the outer part of the Central Basin. The surface layer is dark-brown cherty silt loam about 4 to 7 inches thick. The subsoil is strong-brown or yellowish-brown, firm clay. Depth to limestone bedrock commonly ranges from 2 to 5 feet. The chert in the surface layer washed or rolled from cherty soils in higher areas.

Included with this soil in mapping are small areas of a soil that has a surface layer of dark-brown, brown, or yellowish-brown cherty silty clay loam or clay. Also included are small, severely eroded areas in which rock crops out.

In unlimed areas, this soil is very strongly acid or strongly acid in the upper part of the profile and is medium acid through neutral in the layer just above the bedrock. It is medium or high in phosphorus. Runoff is rapid, the available water capacity is medium, and permeability is moderately slow.

In most places this soil is suited to permanent pasture, but the included severely eroded areas are better suited to trees than to pasture. Most of the acreage is used for unimproved pasture, is idle, or is reverting to woodland. A few areas are used for crops. The trees are mainly eastern redcedar and locust. Capability unit VIe–2; woodland group 3r8.

Mimosa silt loam, 2 to 5 percent slopes (MoB).—This well-drained, gently sloping soil is underlain by phosphatic limestone rock at a depth of about 2 to 5 feet. It has the profile described as representative for the series.

Included with this soil in mapping are a few areas of rock outcrops.

This soil is medium or high in phosphorus. In unlimed areas, it is strongly acid or very strongly acid in the upper part of the profile and is medium acid through neutral in the layer next to the bedrock. Permeability is moderately slow, and the available water capacity is medium.

This soil is well suited to small grains, most hay crops, and pasture. It is not well suited to row crops because the water supply is limited during dry periods. Capability unit IIIe–3; woodland group 3o7.

Mimosa silt loam, 5 to 12 percent slopes, eroded (MoC2).—This well-drained, rolling soil is on uplands in the outer part of the Central Basin. It has a surface layer of dark-brown or brown, friable silt loam about 4 to 6 inches thick. The subsoil is yellowish-brown or strong-brown, firm clay. Depth to limestone bedrock generally is 2 to 5 feet.

Included with this soil in mapping are small areas of a soil that has a surface layer of brown or yellowish-brown silty clay loam and some areas of rock outcrop.

In unlimed areas, this soil is strongly acid or very strongly acid in the upper part of the profile and generally is medium acid through neutral in the layer above the bedrock. The phosphorus content is medium or high. The available water capacity is medium. Runoff is rapid, and permeability is moderately slow.

This soil is fairly well suited to most of the commonly grown crops. It is better suited to small grains, most hay crops, and pasture plants than to annual crops that are grown in summer. Nearly all of the acreage has been cleared and is used for crops and pasture. Capability unit IVe–2; woodland group 3o7.

Mimosa silt loam, 12 to 20 percent slopes, eroded (MoD2).—This well-drained, eroded soil has a surface layer of dark-brown silt loam about 4 to 7 inches thick. The subsoil is yellowish-brown or strong-brown, firm clay. Depth to bedrock ranges from 2 to 5 feet.

Included with this soil in mapping are small areas of a soil that has a surface layer of brown or yellowish-brown silty clay loam, and a few areas where limestone bedrock crops out.

This soil is strongly acid or very strongly acid in the upper part of the profile and is medium acid through neutral in the layer above the bedrock. The available water capacity is medium. Runoff is rapid, and permeability is moderately slow.

This soil is suited to permanent pasture or hay. About 90 percent of the acreage was once cleared and used for cultivated crops. Most of the acreage is now used for pasture; but a few areas are cropped. Capability unit VIe–2; woodland group 3o7.

Mountview Series

The Mountview series consists of deep, well-drained soils on uplands on the Highland Rim. These soils developed in a loamy mantle high in silt and 2 or 3 feet thick that is underlain by old alluvium or by cherty residuum weathered from limestone (fig. 17). Slopes range from 2 to 12 percent.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 60 inches. It is yellowish-brown, friable silt loam in the uppermost 4 inches; yellowish-brown and strong-brown, friable and firm silty clay loam in the middle part; and yellowish-red, firm clay mottled with yellowish brown and pale brown in the lowermost part.

Representative profile of Mountview silt loam, 2 to 5 percent slopes:

Ap—0 to 7 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary.

B1—7 to 11 inches, yellowish-brown (10YR 5/4) silt loam; weak, fine, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary.

B21t—11 to 24 inches, yellowish-brown (10YR 5/8) silty clay loam; moderate, fine and medium, subangular blocky structure; friable; few clay films; very strongly acid; gradual, smooth boundary.

B22t—24 to 30 inches, strong-brown (7.5YR 5/6) silty clay loam; few, medium, faint mottles of yellowish brown (10YR 5/6) and yellowish red (5YR 5/6); moderate, medium and fine, angular and subangular blocky structure; firm; few clay films; few small chert fragments; very strongly acid; gradual, wavy boundary.

IIB23t—30 to 48 inches, yellowish-red (5YR 4/8) clay; common, medium, distinct mottles of yellowish brown (10YR 5/6) and pale brown (10YR 6/3); moderate or strong, angular blocky structure; firm; common clay films; common small chert fragments; very strongly acid; gradual, smooth boundary.

IIB24t—48 to 60 inches, yellowish-red (5YR 4/6) clay; common, medium, distinct mottles of light yellowish brown (10YR 6/4), and few, fine, faint mottles of pale brown (10YR 6/3); moderate, medium, subangular blocky structure; firm; common clay films; few chert fragments; very strongly acid.

The Ap horizon ranges from 4 to 9 inches in thickness. It is brown or yellowish brown. The B21t and B22t horizons are yellowish brown or strong brown, and the IIB horizon is dominantly yellowish red or red. The B21t horizon is silt loam in some places. There are a few chert fragments throughout the profile in a few places. The IIB horizon is as much as 30 percent chert fragments. In unlimed areas, reaction is strongly acid or very strongly acid. Depth to cherty limestone ranges from 8 to 25 feet.

Mountview silt loam, 2 to 5 percent slopes (MsB).—This deep, well-drained soil is on the Highland Rim. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of soils that have a few chert fragments throughout the profile. Also included are small areas of a soil that has a cherty silt loam surface layer.

In unlimed areas, this soil is strongly acid or very strongly acid. It is moderately permeable and is easily penetrated by roots. The available water capacity is high. Tilth is good.

This soil is easy to work. It is well suited to many kinds of crops and pasture plants, and it can be used intensively. It is also well suited to most nursery plants grown for commercial use. Capability unit IIe–1; woodland group 3o7.

Mountview silt loam, 5 to 12 percent slopes, eroded (MsC2).—This deep, well-drained soil is on uplands on the Highland Rim. Its surface layer is brown or yellowish-brown, friable silt loam 4 to 7 inches thick. The subsoil is yellowish-brown or strong-brown silty clay loam or silt loam in the upper part and is dominantly yellowish-red, firm clay in the lower part.

Included with this soil in mapping are small areas of soils that have a few chert fragments throughout the profile and small areas of a soil that has a surface layer of cherty silt loam.

This soil is moderately permeable and is easily penetrated by roots. In unlimed areas, it is strongly acid or very strongly acid. Tilth is good. The available water capacity is high.

This soil is easy to work. It is suited to the commonly grown crops and pasture plants and to most of the commercial nursery plants. The response to lime, fertilizer, and other management is good. Capability unit IIIe–1; woodland group 3o7.

Figure 17.—**Profile of a Mountview silt loam. Cherty soil material is below a depth of about 2 feet.**

Rock Land

Rock land (Ro) occurs mainly in the Central Basin, but some areas are on the steep valley walls along Center Hill Lake. Limestone outcrops cover 25 to 90 percent of the surface. The soil material between the rock ledges and in the cracks and crevices of the rocks varies, but it is generally clay or silty clay and about 3 feet deep. Slopes range from 5 to 80 percent.

Rock land has little potential except for trees. Some areas in the Central Basin can be used for grazing, especially in spring and when the growing season is wetter

than normal. Most of the acreage is in redcedar and drought-tolerant hardwoods. Some areas in the Central Basin are a good source of agricultural and industrial limestone. Capability unit VIIs–1; woodland group 4x3.

Sango Series

The Sango series consists of moderately well drained soils that have a fragipan. These soils occupy broad areas on uplands on the Highland Rim. They developed in a thick mantle of loamy material high in silt that is underlain by old alluvium or by clayey residuum derived from limestone. Slopes range from 1 to 3 percent.

In a representative profile the surface layer is dark-gray and pale-brown silt loam about 7 inches thick. The subsoil, to a depth of about 24 inches, is light yellowish-brown, friable silt loam. Below this is a fragipan of grayish, mottled, firm and brittle silt loam and silty clay loam that extends to a depth of about 60 inches.

Representative profile of Sango silt loam:

A1—0 to ½ inch, dark-gray (10YR 4/1) silt loam; weak, fine, granular structure; very friable; very strongly acid; abrupt, smooth boundary.

A2—½ inch to 7 inches, pale-brown (10YR 6/3) silt loam; few, fine, faint mottles of light yellowish brown (10YR 5/4); weak, fine, granular structure; friable; very strongly acid; gradual, smooth boundary.

B1—7 to 11 inches, light yellowish-brown (2.5Y 6/4) silt loam; few, fine, distinct mottles of yellowish brown (10YR 5/4); weak, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary.

B2—11 to 24 inches, light yellowish-brown (2.5Y 6/4) silt loam; few, fine, faint mottles of light brownish gray (10YR 6/2) in lower few inches; moderate, medium, subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

A'2 and B'x1—24 to 34 inches, light brownish-gray (2.5Y 6/2) silt loam; common, medium, faint mottles of light yellowish brown (2.5Y 6/4); moderate, medium, angular blocky structure; firm; few discontinuous clay films on horizontal and vertical ped faces; very strongly acid; gradual, wavy boundary.

B'x2—34 to 45 inches, light-gray (10YR 6/1) silty clay loam; many, medium and coarse mottles of yellowish brown (10YR 5/4) and light yellowish brown (2.5Y 6/4); moderate, coarse, angular blocky structure; brittle and firm; prominent clay films on some horizontal and vertical ped faces; very strongly acid; gradual, wavy boundary.

B'x3—45 to 60 inches, mottled light-gray (10YR 6/1), grayish-brown (10YR 5/2), and light yellowish-brown (2.5Y 6/4) silty clay loam; moderate, coarse, angular blocky structure; brittle and firm; clay films on some ped faces; very strongly acid.

The fragipan is most commonly at a depth of about 2 feet and ranges from 2 to 4 feet in thickness. Depth to bedrock ranges from 6 to 25 feet. In unlimed areas, reaction is very strongly acid.

Sango silt loam (Sa).—This moderately well drained, level soil is on uplands on the Highland Rim. It has a fragipan about 24 to 48 inches thick.

In unlimed areas, this soil is very strongly acid throughout. Surface runoff and internal drainage are slow, and the available water capacity is medium. Permeability is moderate in the upper 2 feet but is slow in the fragipan. The soil is saturated until late in spring.

This soil is easy to work and to keep in good tilth. It is suited to soybeans, lespedeza, common bermudagrass, tall fescue, and white clover. It is poorly suited to alfalfa and tobacco because the lower part of the subsoil is waterlogged occasionally. The response to lime and fertilizer is good. Planting is delayed in spring because of wetness. Capability unit IIw–1; woodland group 3o7.

Staser Series

The Staser series consists of deep, well-drained, level soils on bottom land.

In a representative profile the surface layer is dark-brown cherty silt loam about 26 inches thick. Below this, to a depth of about 60 inches, is dark yellowish-brown, friable cherty silt loam.

Representative profile of Staser cherty silt loam:

Ap—0 to 8 inches, dark-brown (10YR 3/3) cherty silt loam; moderate, fine, granular structure; very friable; slightly acid; clear, smooth boundary.

A1—8 to 26 inches, dark-brown (10YR 3/3) cherty silt loam; weak, fine, subangular blocky structure parting to moderate, medium, granular; friable; few, fine, dark concretions; slightly acid; clear, smooth boundary.

C1—26 to 52 inches, dark yellowish-brown (10YR 3/4) cherty silt loam; weak, fine, subangular blocky structure parting to moderate, medium, granular; friable; few, fine, dark concretions; slightly acid; gradual, smooth boundary.

C2—52 to 60 inches, dark yellowish-brown (10YR 3/4) cherty silt loam; massive; friable; about 33 percent chert fragments as much as 3 inches across; slightly acid.

The A horizon ranges from about 24 to 40 inches in thickness. In some places the A and C horizons contain a thin layer of silty clay loam. The upper 40 inches of the profile is 15 to 35 percent chert fragments, mainly ¼ inch to 3 inches in diameter. In some places below a depth of 40 inches the soil is as much as 75 percent chert fragments. Reaction ranges from medium acid through neutral in each horizon.

Staser cherty silt loam (St).—This well-drained, level soil is on bottom land in the Central Basin.

This soil is medium or high in phosphorus and is medium acid through neutral. Permeability is moderately rapid, and the available water capacity is medium.

Except for chert fragments that interfere with tillage, this soil is easy to keep in good tilth. It is well suited to the row crops commonly grown in the county. It can be used for cultivated crops every year. Most of the acreage has been cleared and is cropped or pastured. The response to management is good. Occasional flooding or overwash in winter and spring are the main problems in management. Capability unit IIs–1; woodland group 2o7.

Stiversville Series

The Stiversville series consists of deep and moderately deep, well-drained soils on hillsides in the outer part of the Central Basin. These soils developed in material that creeped or washed from soils derived from phosphatic, sandy limestone and limestone interbedded with shale. Slopes range from 12 to 30 percent.

In a representative profile the surface layer is dark-brown loam about 7 inches thick. The subsoil extends to a depth of about 40 inches. It is brown, friable loam in the uppermost 13 inches; brown, friable loam or clay loam in the middle part; and yellowish-brown loam in the lowermost part. The underlying material is yellowish-brown, friable loam and mottled yellowish-brown and dark-brown, friable clay loam.

Representative profile of Stiversville loam, 12 to 30 percent slopes, eroded:

Ap—0 to 7 inches, dark-brown (10YR 3/3) loam; moderate, medium, granular structure; very friable; medium acid; abrupt, smooth boundary.

B1—7 to 13 inches, brown (10YR 4/3) loam; weak, fine, subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B21t—13 to 20 inches, brown (7.5YR 4/4) loam; moderate, medium, subangular blocky structure; friable; few thin clay films; very strongly acid; gradual, smooth boundary.

B22t—20 to 28 inches, brown (7.5YR 4/4) loam or clay loam; moderate, fine and medium, subangular blocky structure; friable; few thin clay films; strongly acid; gradual, smooth boundary.

B3—28 to 40 inches, yellowish-brown (10YR 5/6) loam; weak, fine, subangular blocky structure; friable; slightly acid; gradual, smooth boundary.

C1—40 to 47 inches, yellowish-brown (10YR 5/4) loam; common, fine, distinct mottles of very dark grayish brown (10YR 3/2); massive; friable; slightly acid; clear, smooth boundary.

C2—47 to 58 inches, mottled yellowish-brown (10YR 5/4) and dark-brown (10YR 4/3) clay loam; massive; friable; slightly acid; common siltstone fragments.

The A horizon ranges from 5 to 8 inches in thickness. Each horizon is 2 to about 30 percent small, weathered rock fragments. Depth to hard rock ranges from 40 to 65 inches. In unlimed areas, reaction ranges from very strongly acid through medium acid in the upper part of the profile and from strongly acid through slightly acid in the lower part.

Stiversville loam, 12 to 30 percent slopes, eroded (SvE2).—This deep and moderately deep, well-drained soil occurs on hillsides in the outer part of the Central Basin. Weathered limestone fragments may occur in any horizon and commonly increase in number with increasing depth.

This soil has a deep root zone. It is high in phosphorus. In unlimed areas, it is strongly acid or very strongly acid to a depth of about 2 feet and is strongly acid to slightly acid below. Permeability is moderately rapid, and the available water capacity is medium.

This soil is well suited to permanent pasture or hay. It is suited to many crops commonly grown but, because of the slope, it should not be cultivated frequently. Nearly all of the acreage was once cleared and used for cultivated crops. Most of the acreage is now pasture, but a considerable acreage is cropped. The response to management is good. Capability unit IVe–1; woodland group 3o7.

Taft Series

The Taft series consists of somewhat poorly drained soils on the Highland Rim. These soils have a fragipan. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 63 inches. The uppermost part of the subsoil is light yellowish-brown, friable silt loam mottled with light brownish gray. The middle part is mottled light brownish-gray and olive-yellow silt loam. The lowermost part is a brittle fragipan of grayish, mottled silt loam and silty clay loam.

Representative profile of Taft silt loam:

Ap—0 to 6 inches, brown (10YR 5/3) silt loam; common, medium, faint mottles of light brownish gray (10YR 6/2); moderate, medium, granular structure; very friable; strongly acid; clear, smooth boundary.

B21—6 to 14 inches, light yellowish-brown (2.5Y 6/4) silt loam; common, medium, faint mottles of light brownish gray (2.5Y 6/2), few, fine, distinct mottles of olive yellow (2.5Y 6/6); weak, medium, subangular and angular blocky structure; friable; strongly acid; clear, smooth boundary.

B22—14 to 26 inches, mottled light brownish-gray (2.5Y 6/2) and olive-yellow (2.5Y 6/6) silt loam; weak, medium, angular and subangular blocky structure; friable; strongly acid; clear, wavy boundary.

A'2&B'x1—26 to 32 inches, mottled light-gray (10YR 6/1), light brownish-gray (2.5Y 6/2), and light yellowish-brown (10YR 6/4) silt loam; weak, medium, angular and subangular blocky structure; friable; slightly brittle; few dark concretions; very strongly acid; gradual, wavy boundary.

B'x2—32 to 45 inches, light-gray (10YR 6/1) silty clay loam; many, coarse, distinct mottles of light yellowish brown (2.5Y 6/4), and common, medium, distinct mottles of olive yellow (2.5Y 6/6); moderate, fine, angular and subangular blocky structure; firm and brittle; clay films in pockets and pores; few, small dark concretions; very strongly acid; gradual, wavy boundary.

B'x3—45 to 53 inches, light-gray (10YR 6/1); silty clay loam; common, medium, distinct mottles of yellowish brown (10YR 5/6); moderate, fine, angular and subangular blocky structure; firm and brittle; clay films in cracks and old root channels; patches of clay films on peds; very strongly acid; gradual, wavy boundary.

B'x4—53 to 63 inches, light-gray (10YR 6/1) silty clay loam; common, coarse, prominent mottles of strong brown (7.5YR 5/8), and few, fine, distinct mottles of pale brown (10YR 6/3); moderate, medium, angular and subangular blocky structure; firm and brittle; few patchy clay films on some ped faces; clay films in old root channels and pores; few small chert fragments; very strongly acid.

The Ap horizon is brown or dark grayish brown. The Bx horizon is at a depth of 20 to 30 inches and ranges from 24 to 40 inches in thickness.

Taft silt loam (Ta).—This level soil occupies 5- to 50-acre tracts on upland flats and in depressions. It is commonly known as "buckshot land." Its subsoil is saturated in winter and spring. It has a dense, compact fragipan at a depth of about 26 inches.

In unlimed areas, this soil is strongly acid or very strongly acid. It is well aerated in the upper 24 inches. Roots, water, and air easily penetrate as far down as the fragipan, which is slowly permeable and restricts further penetration. This soil is droughty in summer.

This soil is wet in winter and spring and is droughty in summer. After it dries out, it is easy to work. If limed and fertilized and the surface water is removed, this soil is suited to several kinds of crops. It can be used for soybeans or some other row crop every year. It is poorly suited to alfalfa and other deep-rooted crops. The response to lime and fertilizer is good. Capability unit IIIw–1; woodland group 3w8.

Talbott Series

The Talbott series consists of moderately deep, well-drained soils on uplands in the inner part of the Central Basin. These soils developed in residuum weathered from limestone. Slopes range from 2 to 20 percent.

In a representative profile the surface layer is brown silt loam about 4 inches thick. The subsoil, about 20 inches thick, is strong-brown and yellowish-red, firm and very firm clay. The underlying material is yellowish-brown, firm clay. Limestone bedrock is at a depth of about 27 inches.

Figure 18.—Pasture on Talbott very rocky soils, 5 to 20 percent slopes.

Representative profile of Talbott silt loam, 2 to 12 percent slopes, eroded:

Ap—0 to 4 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; medium acid; abrupt, smooth boundary.

B21t—4 to 9 inches, strong-brown (7.5YR 5/6) clay; moderate, fine, angular blocky structure; firm; common clay films; strongly acid; clear, smooth boundary.

B22t—9 to 20 inches, yellowish-red (5YR 5/8) clay; strong, medium, subangular blocky structure; very firm; common clay films; strongly acid; gradual, smooth boundary.

B23t—20 to 24 inches, yellowish-red (5YR 5/8) clay; strong, medium, angular and subangular blocky structure; very firm; common clay films; strongly acid; gradual, smooth boundary.

C—24 to 27 inches, yellowish-brown (10YR 5/4) clay; massive; firm; mildly alkaline.

R—27 inches, limestone bedrock.

The Ap horizon ranges from brown through yellowish-red silt loam to clay. It is 4 to 6 inches thick and in places is as much as 10 percent chert fragments. The B horizon is yellowish red or strong brown. The B23t and C horizons are mottled with shades of brown, yellow, and red. Depth to bedrock ranges from 2 to 5 feet.

Talbott very rocky soils, 5 to 20 percent slopes (TbD).—These soils are in the inner part of the Central Basin. Outcrops of limestone cover 10 to 25 percent of the area in places. The surface layer is brown to yellowish-red silt loam to clay. The subsoil is dominantly yellowish-red, very firm clay. Depth to bedrock ranges from 2 to 5 feet.

In unlimed areas, these soils are medium acid or strongly acid to the layer just above the rock; this layer ranges from strongly acid through mildly alkaline. Surface runoff is rapid, permeability is moderately slow, and the available water capacity is low.

These soils are better suited to trees than to other uses, but permanent pasture consisting of common bermudagrass and lespedeza can be grown (fig. 18). Tillage and clipping are difficult. Most of the acreage is wooded or is idle. The trees are mainly redcedar. Capability unit VIs–1; woodland group 4x3.

Talbott silt loam, 2 to 12 percent slopes, eroded (TlC2).—This well-drained soil formed in residuum weathered from limestone. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of soils that have a plow layer of strong-brown or yellowish-red silty clay loam, areas that have a few rock outcrops, and areas where the surface layer is as much as 10 percent chert fragments.

This soil is medium acid or strongly acid in the surface layer and subsoil and is strongly acid through mildly alkaline in the layer just above the bedrock. The clayey subsoil impedes the penetration of roots and the movement of water and air. Permeability is moderately slow. Because the subsoil is clay, the available water capacity is medium.

This soil is moderately well suited to row crops, small grain, hay, and pasture. It is highly susceptible to erosion. Nearly all of the acreage has been cleared and is used for hay and pasture (fig. 19). Liming and adequate fertilization are important. Capability unit IVe–2; woodland group 3c2.

Figure 19.—A few limestone outcrops on Talbott silt loam, 2 to 12 percent slopes, eroded.

Tarklin Series

The Tarklin series consists of moderately well drained soils on uplands on the Highland Rim. These soils developed in loamy material underlain by cherty clay residuum derived from limestone. Slopes range from 2 to 12 percent.

In a representative profile the surface layer is brown cherty silt loam about 6 inches thick. The subsoil extends to a depth of about 50 inches. The uppermost part of the subsoil is light yellowish-brown, friable cherty silt loam. The middle part is a compact, brittle fragipan of light yellowish-brown cherty silt loam mottled with light gray and brown. The lowermost part is yellowish-red cherty clay mottled with yellowish brown and light yellowish brown. Strata of chert are at a depth of about 50 inches.

Representative profile of Tarklin cherty silt loam, 2 to 5 percent slopes:

Ap—0 to 6 inches, brown (10YR 5/3) cherty silt loam; weak, fine, granular structure; very friable; strongly acid; abrupt, smooth boundary.

B1—6 to 12 inches, light yellowish-brown (10YR 6/4) cherty silt loam; weak, fine, granular or subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B21t—12 to 17 inches, light yellowish-brown (10YR 6/4) cherty silt loam; common, medium, faint mottles of brown (10YR 5/3); weak, medium, subangular blocky structure; friable; few, thin, discontinuous clay films; strongly acid; clear, smooth boundary.

Bx1—17 to 20 inches, light yellowish-brown (10YR 6/4) cherty silt loam; few, medium, distinct mottles of light gray (10YR 6/1), and common, medium, faint mottles of brown (10YR 5/3); weak, medium, subangular blocky structure; compact and brittle; strongly acid; clear, wavy boundary.

Bx2—20 to 32 inches, light yellowish-brown (10YR 6/4) cherty silt loam; many, medium, distinct mottles of light gray (10YR 6/1); weak, medium, subangular blocky structure; compact and brittle; few thin clay films on some peds and in some pores; strongly acid; clear, wavy boundary.

IIB22t—32 to 50 inches, yellowish-red (5YR 5/6) cherty clay; common, medium, distinct mottles of yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4); strong, coarse, subangular blocky structure; firm; strongly acid; clear, wavy boundary.

R—50 inches, strata of chert.

The Ap horizon is brown or dark grayish brown and ranges from 5 to 9 inches in thickness. The B1 and B21t horizons are light yellowish brown or yellowish brown. The Bx horizon (fragipan) is dominantly light yellowish brown mottled with shades of yellow, brown, and gray, and it ranges from 6 inches to about 24 inches in thickness. The A and B horizons are about 15 to 35 percent chert fragments as much as 3 inches in diameter; about 50 percent of the chert is ¼ to ½ inch in diameter. Depth to bedrock ranges from 4 to 12 feet. In unlimed areas, reaction is strongly acid or very strongly acid.

Tarklin cherty silt loam, 2 to 5 percent slopes (TrB).—This moderately well drained, cherty soil has a fragipan. It has the profile described as representative for the series. The surface layer is 5 to 9 inches thick. Chert fragments

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are common in all horizons and make up about 15 to 35 percent of the soil mass. Depth to the fragipan ranges from about 17 to 24 inches.

Included with this soil in mapping are a few areas of soils that are 35 to 50 percent chert fragments.

This soil is strongly acid or very strongly acid. It has low available water capacity. Runoff is medium. Permeability is moderate above the fragipan and slow in the pan.

This soil is droughty and is better suited to small grain, pasture, and hay than to row crops. It is not well suited to alfalfa. Most of the acreage has been cleared and is used mainly for pasture and hay. Some areas are used for corn and small grain. Liberal applications of lime and fertilizer are important. Capability unit IIIe–4; woodland group 3o7.

Tarklin cherty silt loam, 5 to 12 percent slopes, eroded (TrC2).—This moderately well drained, cherty soil is on the Highland Rim. It has a dense fragipan that begins at a depth of about 17 to 24 inches. The surface layer is dark grayish-brown cherty silt loam. The upper part of the subsoil is yellowish-brown or light yellowish-brown cherty silt loam. The fragipan is mottled, light yellowish-brown, yellowish-brown, and light brownish-gray cherty silt loam. Partly weathered cherty limestone is at a depth of 4 to 12 feet. In many cultivated fields a small amount of material from the subsoil has been mixed with the plow layer.

Included with this soil in mapping are a few small areas of soils that have a fragipan at a depth of less than 12 inches.

This soil is low in available water capacity. It is strongly acid or very strongly acid.

If limed, fertilized, and otherwise well managed, this soil is moderately well suited to small grain, pasture, and hay. Because it is droughty in dry periods, it is poorly suited to most row crops. About 80 percent of the acreage has been cleared and is used mainly for pasture and hay. Capability unit IIIe–4; woodland group 3o7.

Waynesboro Series

The Waynesboro series consists of deep, well-drained soils. These soils developed in alluvium that washed from soils derived from limestone, sandstone, and shale. The alluvium extends to a depth of 5 to 20 feet and overlies the residuum derived from limestone or the limestone rock. Slopes range from 2 to 20 percent.

In the representative profile the surface layer is brown loam about 6 inches thick. The upper 6 inches of the subsoil is yellowish-red, friable clay loam. Below this, to a depth of about 72 inches, is red, friable clay and dark-red, firm clay.

Representative profile of Waynesboro loam, 5 to 12 percent slopes, eroded:

Ap—0 to 6 inches, brown (10YR 4/3) loam; weak, medium, granular structure; very friable; strongly acid; abrupt, smooth boundary.

B1—6 to 12 inches, yellowish-red (5YR 4/6) clay loam; weak, fine and medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary.

B21t—12 to 21 inches, red (2.5YR 4/6) clay; moderate, medium and fine, subangular blocky structure; friable; common clay films; very strongly acid; gradual, smooth boundary.

B22t—21 to 72 inches, dark-red (2.5YR 3/6) clay; moderate, fine, subangular blocky structure; firm; common clay films; strongly acid; gradual, smooth boundary.

The Ap horizon is brown, dark brown, or reddish brown and ranges from 4 to 10 inches in thickness. The B1 horizon is strong-brown, yellowish-red, red, or reddish-brown, friable or firm clay loam that ranges from 6 to 16 inches in thickness. The B21t horizon is yellowish-red or red, friable or firm clay or clay loam 9 to 18 inches thick. The B22t horizon is clay or heavy clay loam. Many small, rounded, quartz pebbles are on the surface and throughout the profile in a few areas.

Waynesboro loam, 2 to 5 percent slopes, eroded (WaB2).—This deep, well-drained, gently sloping soil occupies medium or small areas, mainly on hilltops. It formed in old alluvium. The surface layer is brown, friable loam 5 to 9 inches thick. In many places a small amount of reddish material from the subsoil has been mixed with the surface layer. The upper part of the subsoil is yellowish-red clay loam, and the lower part is dark-red clay several feet thick.

In unlimed areas, this soil is strongly acid or very strongly acid. It has high available water capacity and is moderately permeable.

This soil is well suited to all crops grown locally, including truck crops and nursery crops. The response to fertilizer and lime is good. Capability unit IIe–1; woodland group 3o7.

Waynesboro loam, 5 to 12 percent slopes, eroded (WaC2).—This deep, well-drained soil is the most extensive Waynesboro soil in the county. It has the profile described as representative for the series. The surface layer is 4 to 8 inches thick. In most fields the plow layer is mixed with a small amount of subsoil material.

Included with this soil in mapping are small areas of soils where the original surface layer has been washed away and the present surface layer is reddish.

This soil is moderately permeable and has high available water capacity. In unlimed areas, reaction is strongly acid or very strongly acid.

This soil is suited to all crops grown in the county. The slope is the main limitation. The response to fertilizer and lime is excellent. Capability unit IIIe–1; woodland group 3o7.

Waynesboro loam, 12 to 20 percent slopes, eroded (WaD2).—This deep, well-drained soil is on short hillsides and in areas that surround sinks. Its surface layer is dark-brown or brown loam 5 to 8 inches thick. The upper 5 to 10 inches of the subsoil is reddish-brown and yellowish-red, friable clay loam. Below this is dark-red clay several feet thick.

Included with this soil in mapping are spots of an eroded soil that has a plow layer of dark-red clay loam and a few areas of soils that have many rounded quartz pebbles on the surface and throughout the profile.

This soil has a deep, friable root zone. In unlimed areas, it is strongly acid or very strongly acid throughout. The available water capacity is high.

This soil is well suited to pasture and is moderately well suited to many kinds of crops. If it is used frequently for cultivated crops, erosion is a severe hazard. About 20 percent of the acreage is woodland of mixed hardwoods and loblolly pine. The remaining acreage is used mainly for

pasture. The response to fertilizer is good. Capability unit IVe–1; woodland group 3o7.

Waynesboro clay loam, 12 to 20 percent slopes, severely eroded (WcD3).—This soil is dominantly on short slopes around sinks. Its surface layer is reddish-brown clay loam 4 to 6 inches thick. The subsoil is red or dark-red, firm clay several feet thick. Depth to limestone bedrock ranges from 5 to 20 feet. Water-rounded pebbles of quartz are on the surface and throughout the profile in places. Shallow rills are common, and shallow gullies have formed in some fields.

This soil is in poor tilth but is easily penetrated by roots. In unlimed areas, it is strongly acid or very strongly acid. The available water capacity is medium.

This soil is difficult to keep in good tilth and is poorly suited to row crops. If adequately limed, fertilized, and otherwise well managed, it is well suited to all of the pasture plants commonly grown. Most of the acreage is used for pasture; a small acreage is used for corn and hay. About 30 percent of the acreage is woodland. Because of the slope, controlling erosion is a major problem. Capability unit VIe–1; woodland group 4c3.

Crops and Pasture [3]

The soils of DeKalb County are used mainly for farming. The largest acreages are used for corn, hay, small grain, and pasture. The following pages explain the capability grouping used by the Soil Conservation Service, describe the management by capability unit, and give estimated yields of the principal crops grown in the county.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or for engineering.

In the capability system, all kinds of soil are grouped at three levels: the capability class, the subclass, and the unit. These are discussed in the following paragraphs.

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat. (No class V soils in DeKalb County.)

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.

Class VIII soils and landforms have limitations that preclude their use for commercial crop production and restrict their use to recreation, wildlife habitat, or water supply, or to esthetic purposes. (No class VIII soils in DeKalb County.)

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture or range, woodland, wildlife habitat, or recreation.

Capability Units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–3 or IIIe–4. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

[3] Clarence H. Jent, jr., agronomist, Soil Conservation Service, assisted in writing this section.

Management by Capability Units

Suggestions for the use and management of the soils of DeKalb County, by capability unit, are given in the following pages. Specific statements are not made concerning the use of fertilizer, desirable varieties and mixtures of seeds, or favorable dates for planting. Up-to-date information is published from time to time by the Tennessee Agricultural Experiment Station and the Extension Service. Personnel of the local office of the Soil Conservation Service and the Extension Service can furnish information helpful in interpreting this information.

The capability unit designation for each soil in the county is given in the "Guide to Mapping Units" at the back of this survey.

Capability unit I–1

This unit consists of deep, level, very friable silt loams that have a subsoil of friable or very friable silt loam or silty clay loam. These soils are on bottom land or along drainageways and are subject to flooding. The available water capacity is high. Roots penetrate to a depth of 4 feet or more. Fertility is moderate to high. The response to management is excellent.

These soils are well suited to crops and can be farmed intensively. They are easy to work. They are generally not used for pasture, but their high available water capacity makes them especially well suited to supplemental summer pasture. All the common crops can be grown. Alfalfa ordinarily does not survive as long on these soils as on the reddish upland soils. Practically all the acreage is cultivated. Much of it is used for corn and hay. Small acreages are used for tobacco.

The soils in this unit can be row cropped every year because they are level and are not subject to erosion. Plowing under large amounts of residue replenishes the supply of organic matter and preserves tilth. Fertilization is important.

Capability unit IIe–1

This unit consists of deep, well-drained, gently sloping loams and silt loams that are moderately permeable. The root zone is thick and is easily penetrated by air, water, and roots. The available water capacity is high.

These soils are among the best in the county for farming. If adequately limed, fertilized, and otherwise well managed, they are suited to all crops commonly grown. The response to management is good.

These soils are suitable for moderately intensive use. They can be used for row crops as much as 50 percent of the time, but not for more than 2 years in succession. They should not be cultivated every year. They can be conserved and kept productive by means of a suitable cropping system, adequate fertilization, and good water management.

Contour cultivation is effective in controlling erosion. On long slopes the hazard of erosion can be reduced by terracing or contour stripcropping. Diversions protect areas that receive excess runoff from steep slopes. Natural draws provide excellent sites for sodded waterways.

Capability unit IIe–2

The one soil in this unit, Etowah cherty silt loam, 2 to 12 percent slopes, is a deep, reddish soil on stream terraces, toe slopes, and fans. It has only medium available water capacity and is likely to be droughty during the growing season.

If well managed, this soil is suited to all the commonly grown crops. Yields of corn and tobacco vary considerably, depending on distribution of rainfall. The response to lime and fertilizer is good.

A suitable cropping system is one in which a row crop is grown for no more than 2 years in succession and is followed by 2 or more years of grasses and legumes. Tall fescue, white clover, annual lespedeza, sericea lespedeza, common bermudagrass, midland bermudagrass, and alfalfa are suitable hay or pasture crops.

Turning under stalks and stubble replenishes the supply of organic matter and preserves tilth. Terraces, diversions, contour cultivation, and stripcropping on long, uniform slopes are effective in controlling erosion.

Capability unit IIe–3

Moderately well drained, gently sloping silt loams on uplands are in this unit. These soils have a fragipan at a depth of about 24 inches. Roots, air, and water penetrate easily as far down as the pan. During periods of heavy rainfall, the 4- to 10-inch layer just above the pan is waterlogged. During prolonged dry periods, the soils dry out and most crops and pasture plants are damaged.

These soils are easy to work. If fertilized and otherwise well managed, they are moderately well suited to all crops commonly grown. They are well suited to most commercial nursery plants and to tall fescue, white clover, annual lespedeza, and sericea lespedeza for hay and pasture. Their suitability for corn and tobacco varies considerably from year to year, depending on the amount of rainfall. Alfalfa ordinarily does not last more than 2 or 3 years because of the fragipan and the seasonal wetness in the layer just above the pan. Selecting plants that tolerate both excess water and drought partly overcomes these limitations.

A suitable cropping system, adequate fertilization, and good water management reduce runoff and help in controlling erosion. A short cropping system is best. Row crops can be grown as much as 50 percent of the time but not for more than 2 years in succession. Contour cultivation, terraces, contour stripcropping, residue management, and winter cover crops are all effective in erosion control. Residue and winter cover crops also help in preserving tilth. Diversion ditches and vegetated draws are effective in carrying excess runoff. Carefully controlled grazing prevents damage from trampling.

Capability unit IIs–1

This unit consists of level cherty silt loams on first bottoms, along small drainageways, and in depressions. These soils are moderately well drained and well drained and are likely to be flooded for short periods. The numerous chert fragments on the surface and throughout the soil interfere with tillage and reduce the available water capacity to a medium level.

These soils can be tilled throughout a wide range of moisture content. If fertilized and otherwise well managed, they can be used for row crops every year. They are suited to many crops, including corn, soybeans, lespedeza, common bermudagrass, midland bermudagrass, white clover, and tall fescue. They are well suited to pasture, especially to supplemental pasture in summer. Tobacco can be grown in fields that are not likely to be flooded.

Surface or internal drainage can be improved by digging open ditches, by alining rows, and by plowing or cultivating in long, narrow bands that parallel the stream channel. Damage from flooding and sedimentation can be reduced in many areas by straightening, clearing, and snagging the stream channels. Diversions are needed in some areas to protect the soils against runoff from adjacent uplands.

Capability unit IIw–1

This unit consists of level silt loams on uplands. These soils have a fragipan at a depth of about 24 inches. The pan restricts the movement of water and air and the penetration of roots. As a result, the 4- to 10-inch layer just above the pan is waterlogged during wet periods. During prolonged dry periods, the soils dry out and do not supply sufficient moisture for most crops. The surface layer of these soils is easy to work. The response to lime and fertilizer is good.

These soils can be row cropped every year if they are adequately fertilized and otherwise well managed, but they are better suited to a short cropping system. They are especially well suited to a rotation of corn followed by lespedeza. They are also suited to soybeans. They are poorly suited to alfalfa because of the shallow root zone and the seasonal wet layer just above the fragipan.

Tall fescue, common bermudagrass, midland bermudagrass, white clover, and annual lespedeza are suitable pasture crops. Supplemental summer pasture can be grown, but it is affected by drought.

Wetness in spring delays tillage in many places. Open ditches provide effective drainage in areas where outlets are available. Removing excess water, plowing under crop residue to preserve tilth, delaying tillage and protecting pasture from trampling when the soils are wet, and selecting water-tolerant and drought-tolerant plants are all important practices in management.

Capability unit IIw–2

Egam silt loam, the one soil in this unit, is a level, fertile soil along the larger drainageways and streams in the Central Basin. In most areas surface drainage is slow; some areas are ponded or flooded for short periods. The available water capacity is high. Natural fertility is high, and the content of phosphorus is medium to high. Reaction is medium acid to neutral. No lime is needed.

This soil is well suited to soybeans, tall fescue, white clover, and lespedeza. It is suited to supplemental summer pasture but is too wet and too soft for grazing during long periods in winter and spring. Corn grows well, but it should be planted slightly later on this soil than on the well-drained soils. Small grains can be grown in areas where surface drainage is good and ponding or flooding is not severe.

This soil can be row cropped every year because it is level and is not subject to erosion. It can be cultivated within only a narrow range of moisture content because it either forms clods or puddles if tilled when wet and it hardens when dry. In many places a system of open drainage ditches and diversion ditches improves surface and internal drainage. Plowing under large amounts of residue replenishes the supply of organic matter and preserves tilth.

Capability unit IIIe–1

This unit consists of deep, friable, well-drained, gently rolling loams and silt loams on uplands and terraces. These soils are easily penetrated by air, water, and roots. The plow layer is easy to work. The available water capacity is high. The response to management is good.

If fertilized and otherwise well managed, these soils are suited to many crops, including corn, tobacco, small grains, lespedeza, white clover, alfalfa, orchardgrass, and tall fescue. They are well suited to most commercial nursery species.

Controlling erosion is the main problem. A suitable cropping system, adequate fertilization, and good management are needed.

A suitable cropping system is a row crop followed by a small grain, then pasture or hay for 2 or more years or a row crop followed by alfalfa for 4 years. These rotations work well in strips.

Vetch, crimson clover, or small grains are effective winter cover and green-manure crops because they replenish the supply of organic matter and protect the soils against erosion. Plowing under crop residue helps in controlling erosion and preserving tilth. Diversions, stripcropping, terraces, and contour cultivation also are effective in erosion control. In many places natural draws provide excellent sites for sod waterways.

Capability unit IIIe–2

This unit consists of deep, well-drained silt loams and cherty silt loams that have a clayey subsoil. Chert is scattered over the surface and throughout the soil. The available water capacity is medium. Drought is a frequent limitation.

If fertilized and otherwise well managed, these soils are suited to tobacco, small grain, annual lespedeza, and most other commonly grown legumes and grasses. Alfalfa can be grown under high level management. A row crop once every 3 or 4 years followed by hay or pasture is a suitable cropping system.

The major plant food elements are needed for most crops. Boron is needed for good stands of alfalfa. Diversions, contour stripcropping, and contour cultivation are effective in controlling runoff and erosion. Close-growing vegetation in the natural draws provides for the safe removal of runoff.

Capability unit IIIe–3

The one soil in this unit, Mimosa silt loam, 2 to 5 percent slopes, has a thin surface layer and a clayey subsoil. It is about 2 to 5 feet deep over phosphatic limestone. Rock outcrops are common in most areas. The available water capacity is medium.

This soil is best suited to small grains or pasture plants, but corn, tobacco, and other row crops can be grown. Most crops, especially summer annuals, grow little during dry periods. Water is held tightly by the clayey subsoil and is not readily available to plants. A suitable cropping system is a row crop followed by a small grain, and then 2 or more years of pasture or hay.

This soil is well suited to most grasses and legumes grown in the county. Suitable pasture plants are tall fescue, orchardgrass, common bermudagrass, white clover, annual

lespedeza, and sericea lespedeza. Alfalfa can be grown for hay or in mixtures for pasture.

Proper fertilization insures large amounts of residue that protect the soil against erosion, and if plowed under, help in replenishing the supply of organic matter and preserving tilth. Contour cultivation and stripcropping are effective in controlling erosion where row crops are grown. In places diversions are needed to collect runoff and carry it to suitable outlets.

Capability unit IIIe–4

This unit consists of cherty silt loams that are slowly permeable and have a fragipan at a depth of 12 to 24 inches. The pan restricts growth of roots and movement of air and water. Excess water accumulates above the pan during wet periods, and the soils dry out rapidly during dry periods. The available water capacity is low.

Suitable crops are sorghum, small grain, sericea lespedeza, and annual lespedeza. Small grains grow well during periods of ample rainfall. A suitable cropping system is a row crop, a small grain, and sod for 2 or more years or a row crop followed by a hay crop for 3 or more years. A winter cover crop adds organic matter to the soil and helps control erosion.

These soils are suited to tall fescue, common bermudagrass, sericea lespedeza, and annual lespedeza. They are poorly suited to alfalfa. Lime and fertilizer are needed for all crops and pasture grasses.

These soils are difficult to manage because of the slope and the compact subsoil. They are highly susceptible to erosion. Contour cultivation, stripcropping, terracing, or a combination of these, are effective in controlling runoff and erosion in areas planted to row crops. Diversions can be used to carry excess water to safe outlets. Natural draws are good sites for sod waterways.

Capability unit IIIw–1

The one soil in this unit, Taft silt loam, is somewhat poorly drained and has a fragipan at a depth of about 26 inches. The subsoil is poorly aerated; it is slowly permeable to air and water, and it restricts the growth of roots. The upper part is friable silt loam. The pan is dense silt loam or silty clay loam.

This soil is easy to work, but it is saturated in winter and spring and in places is ponded, and in summer and fall it generally dries out and is droughty. The response to management is good.

Under natural drainage, crop failures are common. Under supplemental drainage, corn, sorghum, and soybeans are fairly well suited. Tall fescue, common bermudagrass, white clover, and annual lespedeza are suitable hay and pasture plants. Deep-rooted legumes, such as alfalfa, are poorly suited. The soil is easily damaged by overgrazing when it is dry and by trampling when it is wet.

Wetness is the main limitation. It often delays tillage in spring and harvest in fall. It can be overcome by selecting crops that tolerate wetness and by using open ditches to remove surface water from pockets and low areas where suitable outlets are available. Tile drainage probably would not be effective because of slow internal water movement.

Row crops can be grown every year because this soil is nearly level and is not likely to erode. Large amounts of fertilizer should be applied and stalks and stubble plowed under to replenish the supply of organic matter and to preserve tilth.

Capability unit IVe–1

Well-drained, moderately deep to deep silt loams and loams on uplands and terraces are in this unit. They have a loamy and clayey subsoil. The root zone is moderately deep to deep, and the available water capacity is medium. The response to management is good.

If limed, fertilized, and otherwise well managed, these soils are suited to many crops, mainly corn, tobacco, alfalfa, orchardgrass, red clover, white clover, tall fescue, and lespedeza. Pasture can be grazed throughout the year.

A suitable cropping system, proper fertilization, contour cultivation, and stripcropping are effective control measures.

A suitable cropping system is a row crop one-fourth of the time and grass and legumes three-fourths of the time. In many areas diversions can be used to carry excess runoff to safe outlets. Natural draws, seeded or in sod, provide for the safe removal of runoff water.

Capability unit IVe–2

This unit consists of sloping silt loams, cherty silt loams, and silty clay loams that have a dominantly clayey subsoil. In some areas the surface layer forms crusts when it is dry and hard clods if it is tilled when moist. The available water capacity is medium to low.

These soils are moderately well suited to corn and tobacco. Small grains grow well because moisture is ample during the growing season. The erosion hazard is severe. Row crops should be planted only once every 4 to 6 years. A suitable cropping system is a row crop followed by a small grain and then sod for 3 years or more.

These soils are well suited to most commonly grown pasture grasses and legumes, mainly tall fescue, orchardgrass, bermudagrass, white clover, annual lespedeza, and sericea lespedeza. Alfalfa can be grown, but good stands are somewhat difficult to establish and maintain. Fertility varies. Consequently, the amount of fertilizer needed should be determined by soil tests.

Water management is important in most areas. Diversions, stripcropping, and contour cultivation reduce runoff. Each row crop should be followed by a winter cover crop of crimson clover, vetch, or a small grain. Plowing under cover crops and crop residue replenishes the supply of organic matter.

Capability unit IVe–3

Dowellton silt loam, 2 to 12 percent slopes, the one soil in this unit, is poorly drained and has a plastic, clayey subsoil. It occurs on benches on uplands. Permeability is low. The content of phosphorus is low to high. Reaction is strongly acid to slightly acid. The response to lime and fertilizer is good.

This soil is better suited to permanent pasture or hay than to row crops. If fertilized and otherwise well managed, it is suited to small grains and sorghum. Common bermudagrass, tall fescue, annual lespedeza, and sericea lespedeza are suitable grasses and legumes. Pasture is easily damaged if overgrazed when dry or trampled when wet.

Because of the slope and the compact subsoil, this soil is difficult to manage. It is difficult to keep in good tilth unless it is cultivated within only a narrow range of

moisture content. Constructing and maintaining terraces and diversions are difficult because of the plastic, clayey subsoil.

Capability unit IVw–1

Guthrie silt loam, the one soil in this unit, is on uplands and in depressions. It has a fragipan at a depth of about 30 inches. The pan limits growth of roots and the movement of air and water. Surface runoff is slow, and in many places ponding is common. The soil is generally saturated in winter and spring and is extremely dry during prolonged dry periods in summer and fall. Fertility is low. The response to lime and fertilizer is generally good.

In most areas this soil is poorly suited to row crops. If adequately drained, it is suited to soybeans or other summer annuals that can be planted late in spring and harvested early in fall. In places waterlogging delays or prevents harvesting and the use of heavy machinery.

This soil is well suited to water-tolerant permanent pasture. It is suited to tall fescue, white clover, and annual lespedeza. This soil is easily worked if it contains the proper amount of moisture. It is not subject to erosion. Excess surface water can be removed by open ditches where suitable outlets are available. Wooded areas should remain in trees unless needed for other purposes.

Capability unit VIe–1

This unit consists of deep, well-drained, moderately steep and steep cherty silt loams and clay loams on uplands. These soils have moderate or moderately rapid permeability and medium available water capacity.

Because slopes are strong and erosion is a hazard, these soils are poorly suited to crops that require tillage, but they are well suited to permanent pasture and hay. Orchardgrass, tall fescue, common bermudagrass, white clover, red clover, annual lespedeza, and sericea lespedeza are among the commonly grown grasses and legumes.

Controlling runoff to reduce erosion is the main management problem. Well-fertilized grasses and legumes make good hay and pasture and unless overgrazed or mowed too closely, reduce runoff and erosion. A grass-legume mixture affords better protection than a legume alone. Grazing is possible in winter because the soils are not wet or soft.

These soils should be plowed only to reseed pasture or hay. Establishing or renovating pasture or hay in alternate contour strips reduces erosion. Many areas revert to locust and other woody plants. Consequently, brush and weed control are especially important in pasture management.

Capability unit VIe–2

The soils in this unit are sloping to steep silt loams, cherty silt loams, and silty clays that have a dominantly clayey subsoil. They are moderately deep and deep over bedrock. Some are cherty. The plow layer is thin and contains some subsoil material. There are a few outcrops of limestone.

These soils are highly susceptible to erosion and consequently are poorly suited to crops that require tillage. Runoff is medium or rapid because of the slope and the moderate or moderately slow permeability in the clayey subsoil. Selected crops can be grown occasionally in some areas, but special practices and very careful management are needed for control of erosion. Cultivated areas are well suited to cropping systems in which a small grain is followed by a sod or hay crop for 6 years or more.

These soils are suited to permanent pasture, hay, or trees. If fertilized and otherwise well managed, they are suited to tall fescue, common bermudagrass, bluegrass, white clover, and lespedeza. Growth is generally fast in spring but is slow in summer and fall because of drought.

Ordinarily, good seedbeds are difficult to prepare and good stands are difficult to establish and maintain, particularly in the more eroded areas. In places the soils are difficult to till because of limestone outcrops or flags and chert on the surface. They can be tilled within only a narrow range of moisture content; otherwise hard clods form. Diversions and stripcropping divert or retard excess runoff in areas used for row crops. Establishing or renovating pasture or hay in alternate contour strips helps in controlling erosion.

Capability unit VIs–1

The soils in this unit are sloping to moderately steep and cherty or very rocky. All are low in available water capacity. Outcrops of bedrock, a fine-textured subsoil, a cherty surface layer and subsoil, or a combination of these features make the soils poorly suited to crops that require tillage. Suitability for pasture and hay varies greatly. Woodland is a good use in most areas. The response to management is not so good as on deep soils that have high available water capacity.

Suitable plants for pasture and hay are tall fescue, common bermudagrass, bluegrass, white clover, and annual lespedeza. Plant growth is slow in summer and fall because of drought.

These soils are difficult to till because of the chert and rocks. They should be plowed or disked only to prepare a seedbed for reestablishing pasture. Seeding long slopes in alternate contour strips is the safest and most efficient way to establish or renovate pasture. Many areas can be protected from excess runoff by diversions. Carefully controlled grazing is important, especially during dry periods.

Capability unit VIIe–1

The soils in this unit are dominantly steep. They are on uplands. In cleared areas surface runoff is moderate or rapid, and the erosion hazard is great.

These soils are suited to trees, mainly loblolly pine, black walnut, yellow-poplar, red oak, and white oak. Cleared areas generally need to be reforested.

Good woodland management consists of maintaining a stand of desirable trees, selective harvesting, fire prevention, and controlled grazing. Most areas provide good food and cover for wildlife.

Capability unit VIIs–1

The soils in this unit are steep to very steep and very rocky or cherty. They have low available water capacity.

Most of the acreage is wooded. Loblolly pine, black walnut, red oak, white oak, and yellow-poplar grow fairly well in most areas. Areas having many rock outcrops are suited to redcedar, which establishes itself if protected from fire and grazing.

Selective harvesting of mature trees and protection from fire and grazing are needed. Eliminating cull or weed trees helps to conserve moisture for the more desirable trees.

Estimated Yields

Table 4 lists estimated yields of the principal crops grown in DeKalb County. The yields are those to be expected under improved management that does not include irrigation. They generally are 20 to 35 percent higher than yields that can be expected under prevailing management.

TABLE 4.—*Estimated average yields per acre of the principal crops*

Yields are those to be expected under improved management that does not include irrigation. Absence of yield indicates crop is not suited to the soil or is not commonly grown]

Soil	Corn	Oats	Tobacco	Alfalfa hay	Lespedeza hay	Pasture
	Bu.	*Bu.*	*Lbs.*	*Tons*	*Tons*	*Cow-acre-days* [1]
Armour silt loam, 2 to 5 percent slopes	95	70	2,300	4.0	1.8	220
Armour silt loam, 5 to 12 percent slopes	85	65	2,100	3.8	1.6	195
Arrington silt loam	110	65	2,200	3.0	2.0	220
Bodine cherty silt loam, 5 to 20 percent slopes		30			.6	70
Bodine cherty silt loam, 20 to 50 percent slopes						40
Bodine-Rock land complex, 30 to 75 percent slopes						
Capshaw silt loam, phosphatic, 2 to 5 percent slopes	65	60	1,800	2.0	1.5	170
Christian cherty silt loam, 5 to 12 percent slopes, eroded	55	60	1,550	3.2	1.3	145
Christian cherty silt loam, 12 to 20 percent slopes, eroded	50	60	1,500	2.9	1.2	140
Christian cherty silt loam, 20 to 30 percent slopes, eroded						85
Christian silt loam, 5 to 12 percent slopes, eroded	60	65	1,900	3.3	1.4	155
Christian silty clay, 5 to 12 percent slopes, severely eroded		45	1,300	2.5	.8	120
Dellrose cherty silt loam, 20 to 35 percent slopes						140
Dellrose cherty silt loam, 35 to 55 percent slopes						95
Dickson silt loam, 0 to 2 percent slopes	75	60	1,800	1.8	1.5	160
Dickson silt loam, 2 to 5 percent slopes	70	65	2,000	1.8	1.4	160
Dowellton silt loam, 2 to 12 percent slopes					1.1	120
Egam silt loam	85	60	1,700	1.5	2.0	210
Ennis cherty silt loam	80	60	1,900	2.5	1.5	180
Ennis silt loam	110	70	2,300	3.5	2.0	230
Etowah cherty silt loam, 2 to 12 percent slopes	75	65	2,000	3.0	1.4	180
Etowah silt loam, 2 to 5 percent slopes	90	70	2,300	3.6	1.8	210
Fullerton cherty silt loam, 5 to 12 percent slopes, eroded	55	50	1,600	2.8	.9	150
Fullerton cherty silt loam, 12 to 25 percent slopes, eroded	45	45	1,400	2.6	.8	140
Gullied land						
Guthrie silt loam	45				1.4	160
Hampshire silt loam, 5 to 12 percent slopes, eroded	50	50	1,600	2.5	1.1	145
Hampshire silt loam, 12 to 20 percent slopes, eroded				2.3	1.0	125
Hampshire silt loam, 20 to 30 percent slopes, eroded						105
Hicks silt loam, 5 to 12 percent slopes	75	65	2,000	3.2	1.4	195
Inman flaggy silt loam, 12 to 30 percent slopes, eroded						50
Lobelville cherty silt loam	65	50	1,400	1.9	1.4	175
Lobelville silt loam	105	70	1,550	2.0	2.0	200
Lynnville silt loam	105	70	1,600	2.7	2.0	200
Mimosa very rocky soils, 5 to 20 percent slopes						75
Mimosa very rocky soils, 20 to 40 percent slopes						
Mimosa cherty silt loam, 5 to 12 percent slopes, eroded	40	40	1,400	2.5	.9	120
Mimosa cherty silt loam, 12 to 20 percent slopes, eroded				2.4	.8	100
Mimosa cherty silt loam, 20 to 30 percent slopes, eroded						85
Mimosa silt loam, 2 to 5 percent slopes	55	55	1,800	2.8	1.4	160
Mimosa silt loam, 5 to 12 percent slopes, eroded	45	50	1,600	2.6	1.1	145
Mimosa silt loam, 12 to 20 percent slopes, eroded				2.5	.9	115
Mountview silt loam, 2 to 5 percent	85	70	2,200	3.3	1.4	210
Mountview silt loam, 5 to 12 percent slopes, eroded	75	65	2,100	3.2	1.3	195
Rock land						
Sango silt loam	65	60			1.5	160
Staser cherty silt loam	80	60	2,000	3.0	1.5	180
Stiversville loam, 12 to 30 percent slopes, eroded	60	55	1,800	2.8	1.2	175
Taft silt loam	50	50			1.4	160
Talbott very rocky soils, 5 to 20 percent slopes						75
Talbott silt loam, 2 to 12 percent slopes, eroded	50	50	1,600	2.2	1.1	145
Tarklin cherty silt loam, 2 to 5 percent slopes	45	50	1,350	1.4	1.2	150
Tarklin cherty silt loam, 5 to 12 percent slopes, eroded	35	40	1,300	1.4	1.0	130
Waynesboro loam, 2 to 5 percent slopes, eroded	80	70	2,200	3.5	1.7	210
Waynesboro loam, 5 to 12 percent slopes, eroded	75	65	1,950	3.2	1.4	195
Waynesboro loam, 12 to 20 percent slopes, eroded	65	55	1,700	2.8	1.2	170
Waynesboro clay loam, 12 to 20 percent slopes, severely eroded				2.3	.8	145

[1] Cow-acre-days is a term used to express the carrying capacity of pasture. It is the number of days in the grazing season that 1 acre will provide grazing for one cow, steer, or horse; five hogs; or seven sheep or goats without injury to the pasture. To determine the tonnage of air-dry forage per acre, divide the number of cow-acre-days by 53.

The estimates are based on yield data obtained through long-term experiments; on records of crop yields harvested on farms that are cooperating in a study of soil productivity and management; and on information obtained from agronomists and soil scientists who have had experience with the crops and soils in the county.

Data for yields obtained from experimental plots were adjusted to reflect the combined effect of slope, weather, and level of management. If such data were not available, estimates were made by using data for similar soils. The estimates are averages of long-term annual yields obtained from nonirrigated crops. The overflow hazard of soils on bottom land was not considered because the effects of flooding vary locally.

The management needed to obtain yields similar to those listed in table 4 is assumed to include the following practices:

1. Applying fertilizer according to the needs indicated by soil tests and by past cropping and fertilization practices. This refers especially to needs for phosphorus, potassium, calcium, and minor elements.
2. Selecting high-yielding varieties of crops suited to the soil.
3. Preparing an adequate seedbed.
4. Planting or seeding by suitable methods at an approximate rate and at the right time.
5. Inoculating legumes.
6. Using shallow cultivation for row crops.
7. Controlling weeds, insects, and diseases.
8. Using the cropping systems suggested in the section on management by capability units.
9. Conserving soil and water by establishing waterways, cultivating on the contour, terracing, or contour stripcropping.
10. Regulating grazing.

The rates of planting and fertilization needed to obtain yields equal to the estimates in table 4 are shown, by crops, in the following paragraphs.

Corn.—Soils that have an estimated yield of 85 bushels or more per acre (as shown in table 4) require 100 to 125 pounds of nitrogen and 12,000 to 16,000 plants per acre. Soils that have an estimated yield of 60 to 85 bushels per acre ordinarily require 75 to 100 pounds of nitrogen and 8,000 to 12,000 plants per acre. Soils that have an estimated yield of 40 to 60 bushels per acre ordinarily require 50 to 70 pounds of nitrogen and about 8,000 plants. An estimated yield of less than 40 bushels per acre indicates that the soil should be used for some other crop.

Nitrogen can be supplied by using commercial fertilizer, barnyard manure, residue from legumes, or any combination of these. The rates of fertilization and planting of corn grown for silage are the same as those of corn grown for grain. To determine the approximate yield of corn silage, in tons, divide the number of bushels of corn by 5.

Burley tobacco.—The requirement for yields listed in table 4 is 100 to 130 pounds of nitrogen at, or shortly before, planting time, and 8,500 to 10,000 plants per acre.

Nitrogen can be supplied by adding commercial fertilizer or by combining a commercial fertilizer and barnyard manure.

Alfalfa.—To obtain the yields listed in table 4, apply 20 pounds of borax per acre when alfalfa is seeded and 20 pounds annually thereafter. After the first year, apply annually the amounts of phosphate and potash indicated by soil tests. If the soils are not tested, apply 30 pounds of phosphate and at least 120 pounds of potash per acre.

Control grazing, control insects, and do not cut hay between September 10 and the date of the first killing frost. The yields listed for alfalfa in table 4 do not apply to soils that are ponded or flooded.

Oats.—To obtain the yields of oats listed in table 4, apply 30 pounds of nitrogen per acre at seeding time in fall. For both common and improved management, the approximate yield, in tons, of oats harvested for hay can be determined by dividing the number of bushels of oats listed by 31.

Lespedeza.—To obtain the yields of lespedeza listed in table 4, seed Kobe lespedeza alone in spring on a prepared seedbed or allow it to volunteer. Add fertilizer in amounts determined by soil tests.

Annual yields of lespedeza overseeded on a small grain harvested for grain are about 50 to 60 percent less than yields of lespedeza seeded alone. Overseeding generally results in nearly complete failure of the lespedeza crop once every 2 years. If the small grain is harvested for hay, yields of lespedeza generally are about 80 percent of those obtained when lespedeza is seeded alone.

Pasture.—To obtain the yields of pasture listed in table 4, apply fertilizer at seeding time in amounts determined by soil tests. If the clover in a mixture is sparse, topdress with 30 pounds of nitrogen per acre late in February each year.

Pasture plants suited to the soils of DeKalb County are too numerous to list in table 4. Yields of tall fescue and white clover, both of which are water tolerant, are estimated for the poorly drained Dowellton and Guthrie soils. Yields of the common pasture plants are estimated for the rest of the soils. Common mixtures for improved pasture are orchardgrass and white clover, or tall fescue and white clover. For information about the suitability of specified pasture plants for specified soils, see the sections "Descriptions of the Soils" and "Management by Capability Units."

Woodland [4]

DeKalb County was once described as "a wilderness of great trees and canebrakes." On the Highland Rim, locally called "Barrens," was an open stand of post oak, white oak, black oak, and hickory, and also a few pine groves. The Central Basin, or hill country, originally had dense stands of yellow-poplar, black walnut, black cherry, basswood, red oak, white oak, beech, sugar maple, black locust, and ash. Redcedar grew in the rocky limestone areas.

In 1961, woodland covered almost 52 percent of the county, or about 92,300 acres (7). Part of this acreage, about 16,500 acres adjacent to the Center Hill Reservoir, is owned by the U.S. Army Corps of Engineers. The rest is in small private tracts. The average stand of timber is less than 1,200 board feet per acre and is low in quality, as a result of high grading and wildfires. Much of the woodland on the more level soils on the Highland Rim is being

[4] By C. M. HENNINGER, woodland conservationist, Soil Conservation Service.

cleared for crops and pasture, but the steep hill section, or Central Basin area, is reverting to timber.

Production of Wood Crops

The soils of DeKalb County have been assigned to 13 woodland groups. Groupings are based on the potential of the soils for production of wood crops and on soil characteristics that affect management. The soils in each group have about the same suitability for trees, are about the same in productivity, and have limitations that require similar management. Gullied land is not assigned to a group because it varies greatly. Onsite investigation is needed in each area.

Table 5 shows the woodland groups, by group symbols, the soils in each group, by map symbols, the potential productivity of specified trees, and the factors to be considered in management. The woodland group designation for each soil in the county is shown in the "Guide to Mapping Units" at the back of this survey.

The first number in the group symbols used in DeKalb County indicates the relative potential productivity of the soils in the group for wood crops. It expresses the site quality, which is based on the site index of one or more important forest types or species. The numeral 1 indicates that potential productivity is very high, 2 indicates high, 3 indicates moderately high, 4 indicates moderate, and 5 indicates low. Only numerals 2, 3, and 4 are shown in table 5.

The second part of the symbol indicates an important soil property that imposes a hazard or limitation. The letter *x* indicates stoniness or rockiness; *w* indicates excessive wetness; *c* indicates that the main limitation is the amount of clayey material in the soil profile; *f* indicates that large amounts of coarse fragments in the soil profile adversely affect woodland management; *r* indicates that the slope is the main limitation; and *o* indicates no significant limitation.

The third part of the symbol indicates the degree of hazard or limitation and the general suitability of the soils

TABLE 5.—*Woodland groups*

Woodland groups, descriptions of soils, and map symbols	Potential productivity		
	Wood crops	Site index range	Average yearly growth
			Bd. ft.
Group 2o7: Level to sloping, mainly well-drained soils on bottom land, foot slopes, and low terraces. ArB, ArC, At, Eg, Eh, En, EtC, EwB, St.	Yellow-poplar	86–95	385–500
	Upland oak	76–85	240–345
	Loblolly pine	86–95	740–920
	Shortleaf pine	76–85	670–820
	Redcedar	56 65	255–325
Group 2r8: Steep, well-drained, dark-brown, cherty soils. DeE, DeF.	Yellow-poplar	86–95	385–500
	Upland oak	76–85	240–345
	Loblolly pine	86–95	740–920
	Shortleaf pine	76–85	670–820
	Redcedar	56–65	255–325
Group 2w8: Level, moderately well drained soils on bottom land. Lb, Le, Ly.	Upland oak	76–85	240–345
	Bottom land oak	86–95	385–500
	Sweetgum	86–95	385–500
Group 2w9: Level, poorly drained soils that have a fragipan. Gu.	Upland oak, bottom land oak, sweetgum.	76–85	240–345
Group 3o7: Level to moderately steep, well drained and moderately well drained soils. CaB, CcC2, CcD2, ChC2, DkA, DkB, FuC2, FuD2, HhC2, HhD2, HkC, MnC2, MnD2, MoB, MoC2, MoD2, MsB, MsC2, Sa, SvE2, TrB, TrC2, WaB2, WaC2, WaD2.	Yellow-poplar	76–85	280–385
	Upland oak	66–75	155–240
	Loblolly pine	76–85	570–740
	Shortleaf pine	66–75	540–670
	Redcedar	46–55	195–255
	Virginia pine	66–75	455–540
Group 3r8: Moderately steep and steep, well-drained soils that have a thin loamy surface layer and a clayey subsoil. CcE2, HhE2, InE2, MnE2.	Yellow-poplar	76–85	280–385
	Upland oak	66–75	155–240
	Loblolly pine	76 85	570–740
	Shortleaf pine	66–75	540–670
	Virginia pine	66–75	455–540
	Redcedar	46–55	195–255
Group 3f8: Sloping and moderately steep, excessively drained, cherty soils. BoD.	Yellow-poplar	76–85	280–385
	Upland oak	66–75	155–240
	Loblolly pine	76–85	570–740
	Shortleaf pine	66 75	540–670
	Virginia pine	66–75	455–540
	Redcedar	46–55	195–255

for certain kinds of trees. The numeral 1 indicates that the soils have no significant limitation and are best suited to needleleaf trees (pines or redcedar); 2 indicates the soils have a slight to moderate limitation and are best suited to needleleaf trees; 3 indicates the soils have a moderate to severe limitation and are best suited to needleleaf trees; 4 indicates the soils have no significant limitation and are best suited to broadleaf trees; 5 indicates the soils have a slight to moderate limitation and are best suited to broadleaf trees; 6 indicates the soils have a moderate to severe limitation and are best suited to broadleaf trees; 7 indicates no significant limitation and suitability for both needleleaf and broadleaf trees; 8 indicates a slight to moderate limitation and suitability for both needleleaf and broadleaf trees; 9 indicates a moderate to severe limitation and suitability for both needleleaf and broadleaf trees. The numeral 0 indicates that the soils are not suitable for the production of commercial wood crops. Only numerals 2, 3, 7, 8, and 9 are shown in table 5.

Potential productivity: The important wood crops for the soils of each group are listed under this heading, and each is rated according to site index range and average yearly growth. Site index is the average height, in feet, that the dominant and codominant trees of a given species, growing on the specified soils, will reach in 50 years. The site index ranges given in this survey are based on measurements of trees of different species. The average annual growth, to age 60, in board feet (International rule) is based on the average site index.

Equipment limitation: Some soil characteristics and topographic features restrict or prohibit the use of conventional equipment for planting and harvesting wood crops, constructing roads, controlling unwanted vegetation, and controlling fires. The limitation is *slight* if there is little or no restriction on the type of equipment or on the time of the year that equipment can be used. The limitation is *moderate* if the use of equipment is restricted by one or more unfavorable characteristics, such as slope, stones or other obstructions, seasonal wetness, instability, or risk

and factors in management

Equipment limitation	Seedling mortality	Erosion hazard	Preferred species—	
			In existing stands	For planting
Slight	Slight	Slight	Yellow-poplar, black walnut, loblolly pine, black locust, white oak, northern red oak, white ash, redcedar, and sugar maple.	Yellow-poplar, black walnut, loblolly pine, black locust, white oak, and northern red oak.
Moderate	Slight	Moderate	Yellow-poplar, black walnut, loblolly pine, black locust, and white oak.	Yellow-poplar, black walnut, loblolly pine, black locust, and white oak.
Moderate	Slight	Slight	Yellow-poplar, black walnut, and loblolly pine.	Yellow-poplar, black walnut, and loblolly pine.
Severe	Severe	Slight	White oak, red oak, willow oak, water oak, red maple, loblolly pine, and sweetgum.	Willow oak and water oak.
Slight	Slight	Slight	Yellow-poplar, white oak, red oak, loblolly pine, shortleaf pine, redcedar, and Virginia pine.	Yellow-poplar, loblolly pine, shortleaf pine, and Virginia pine.
Moderate	Slight	Moderate	Yellow-poplar, upland oaks, loblolly pine, shortleaf pine, Virginia pine, and redcedar.	Loblolly pine, shortleaf pine, and Virginia pine.
Slight	Moderate	Slight	Yellow-poplar, upland oaks, loblolly pine, shortleaf pine, Virginia pine, and redcedar.	Loblolly pine, shortleaf pine, and Virginia pine.

TABLE 5.—*Woodland groups and*

Woodland group, descriptions of soils, and map symbols	Potential productivity		
	Wood crops	Site index range	Average yearly growth
			Bd. ft.
Group 3c2: Gently sloping to sloping, well-drained soils that have a thin, loamy surface layer and a clayey subsoil. TlC2.	Loblolly pine	76–85	570–740
	Shortleaf pine	66–75	540–670
	Redcedar	46–55	195–255
	Virginia pine	66–75	455–540
Group 3w8: Level, somewhat poorly drained soils that have a fragipan. Ta.	Yellow-poplar	76–85	280–385
	Upland oak	66–75	155–240
	Sweetgum	76–85	280–385
Group 3w9: Gently sloping and sloping, poorly drained soils that have a clayey, plastic subsoil. DoC.	Upland oak	66–75	155–240
	Sweetgum	76–85	280–385
Group 4f3: Steep and very steep, excessively drained, cherty soils. Bof, Brf.	Upland oak	56–65	90–155
	Virginia pine	56–65	370–455
	Redcedar	36–45	150–195
	Loblolly pine	66–75	440–570
Group 4c3: Sloping and moderately steep, well-drained soils that have a clayey surface layer and a clayey subsoil. CnC3, WcD3.	Redcedar	36–45	150–195
	Virginia pine	56–65	370–455
	Loblolly pine	66–75	440–570
Group 4x3: Sloping to steep, very rocky soils and Rock land. MmD, MmF, Ro, TbD.	Redcedar	36–45	150–195
	Virginia pine	56–65	370–455
	Loblolly pine	66–75	440–570

of injury to roots of trees. The limitation is *severe* if special equipment is needed and if the use of this equipment is severely restricted by one or more unfavorable soil characteristics.

Seedling mortality: Under this heading are ratings that refer to the expected loss of seedlings as a result of unfavorable soil characteristics or topographic features, not as a result of plant competition. Even if healthy seedlings of suitable species are planted correctly or occur naturally in adequate numbers, some will not survive if conditions are unfavorable. The ratings are based on the mortality of seedlings among the number normally planted for adequate stockings. Mortality is *slight* if less than 25 percent of the seedlings die; *moderate* if between 25 and 50 percent die; and *severe* if more than 50 percent die.

Erosion hazard: Ratings under this heading refer to the degree of potential soil erosion when trees are cut and removed from the stand. A rating of *slight* indicates little or no erosion hazard. A rating of *moderate* indicates that some erosion control is needed. A rating of *severe* indicates that intensive treatment and the use of special equipment and methods of operation are needed.

Preferred species: The kinds of trees to be favored in management of existing stands and the kinds to be chosen for planting are listed under this heading. The trees listed are not in order of priority.

Wildlife [5]

Table 6 shows the suitability of the soils in DeKalb County for elements of wildlife habitat and for three kinds of wildlife. Ratings refer only to the suitability of the soil. Not considered are the climate, the present land use, or the distribution of wildlife and people. The suitability of individual sites must be determined by onsite inspection.

The numeral ratings in table 6 are explained in the following paragraphs.

Numeral 1 means *well suited:* Habitat generally is easily created, improved, or maintained; the soil has few or no limitations that affect management; and satisfactory results can be expected.

Numeral 2 means *suited:* Habitat can be created, improved, or maintained in most places; the soil has moderate limitations that affect management; and moderately intensive management is generally needed for satisfactory results.

Numeral 3 means *poorly suited:* Habitat can be created, improved, or maintained in most places; limitations are severe; habitat management is difficult and expensive; and results are not always satisfactory.

Numeral 4 means *unsuited:* Habitat is impractical or impossible to create, improve, or maintain and unsatisfactory results are probable.

[5] By FLOYD R. FESSLER, biologist, Soil Conservation Service.

factors in management—Continued

Equipment limitation	Seedling mortality	Erosion hazard	Preferred species—	
			In existing stands	For planting
Moderate	Moderate	Slight	Redcedar, Virginia pine, loblolly pine, shortleaf pine, and upland oaks.	Redcedar, Virginia pine, and loblolly pine.
Moderate	Moderate	Slight	Yellow-poplar, upland oaks, sweetgum, and loblolly pine.	
Severe	Severe	Slight	Loblolly pine and sweetgum	Loblolly pine and sweetgum.
Severe	Severe	Moderate	Loblolly pine and Virginia pine.	Loblolly pine and Virginia pine.
Moderate to severe	Moderate to severe	Slight to moderate	Redcedar, Virginia pine, loblolly pine, hackberry, hickory, and chinkapin oak.	Redcedar, Virginia pine, and loblolly pine.
Severe	Severe	Slight	Redcedar, Virginia pine, loblolly pine, hackberry, and chinkapin oak.	Redcedar, Virginia pine, and loblolly pine.

The habitat elements shown in table 6 are defined in the following paragraphs.

Grain and seed crops are grain-producing or seed-producing annuals, such as corn, sorghum, millet, and soybeans.

Grasses and legumes are domestic grasses and legumes that are established by planting and furnishing food and cover for wildlife. They include tall fescue, orchardgrass, ryegrass, panicgrasses, clover, annual lespedeza, and bush lespedeza.

Wild herbaceous upland plants are native or introduced perennial grasses, forbs, and weeds that provide food and cover for upland wildlife. Examples are beggarweed, perennial lespedeza, wild beans, pokeberry, partridge peas, crotons, and cheatgrass.

Hardwood woody plants are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, or foliage (browse). These plants, which are used extensively as food by wildlife, are commonly established naturally or may be planted. They include oak, beech, cherry, dogwood, viburnum, maple, grape, honeysuckle, greenbrier, and autumn-olive.

Coniferous woody plants are cone-bearing trees and shrubs that are used mainly as cover but that also furnish food in the form of browse, seeds, or fruitlike cones. They become established naturally or may be planted. Examples are pine, hemlock, cedar, and ornamental plants.

Wetland food and cover plants are annual and perennial wild herbaceous plants on moist to wet sites. These plants do not include submerged or floating aquatic plants. They furnish the food or cover used mostly by wetland wildlife. Examples are smartweed, wild millet, spikerush and other rushes, sedges, burreed, tearthumb, and aneilema.

Shallow water developments are low dikes or other water-control structures established to create habitat principally for waterfowl. They may be designed so that they can be drained, planted, and flooded, or they may be used as permanent impoundments for submerged aquatics.

Pit ponds are areas where water of suitable depth and quality can be impounded, mainly for fish production.

The three types of wildlife listed in table 6 are defined in the following paragraphs.

Openland wildlife include cottontail rabbit, quail, dove, fox, meadowlark, field sparrow, and other birds and mammals that normally live on cropland, pastures, meadows, lawns, and in other openland areas where grasses, herbs, and shrubby plants grow.

Woodland wildlife include squirrel, woodcock, thrush, vireo, deer, grouse, raccoon, wild turkey, and other birds and mammals that normally live in wooded areas.

Wetland wildlife include mink, muskrat, duck, geese, rail, heron, shore birds, and other birds and mammals that normally live in marshes, swamps, and other wet areas.

TABLE 6.—*Suitability of soils for elements of wildlife habitat and kinds of wildlife*

[1 means well suited, 2 means suited, 3 means poorly suited, and 4 means unsuited]

Soil	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Pit ponds [1]	Openland wildlife	Woodland wildlife	Wetland wildlife
Armour:											
ArB	1	1	1	1	3	4	4	4	1	2	4
ArC	2	1	1	1	3	4	4	4	1	2	4
Arrington: At	2	1	1	1	3	4	4	4	1	2	4
Bodine:											
BoD	3	3	2	2	2	4	4	4	3	2	4
BoF	4	3	2	2	2	4	4	4	3	2	4
BrF	4	4	2	2	2	4	4	4	3	2	4
Capshaw: CaB	1	1	1	1	3	4	4	2	1	2	4
Christian:											
CcC2	2	2	2	1	3	4	4	4	2	2	4
CcD2	3	2	2	1	3	4	4	4	2	2	4
CcE2	4	2	2	1	3	4	4	4	3	2	4
ChC2	2	2	2	1	3	4	4	4	2	2	4
CnC3	3	2	2	1	3	4	4	4	2	2	4
Dellrose:											
DeE	4	2	1	1	3	4	4	4	2	2	4
DeF	4	3	1	1	3	4	4	4	3	2	4
Dickson:											
DkA	2	1	1	1	3	3	3	2	1	2	3
DkB	2	1	1	1	3	3	4	4	1	2	3
Dowellton: DoC	3	2	2	2	2	3	2	1	2	2	3
Egam: Eg	2	1	1	1	3	3	3	3	1	2	3
Ennis: Eh, En	2	1	1	1	3	4	4	4	1	2	4
Etowah:											
EtC	2	1	1	1	3	4	4	4	1	2	4
EwB	1	1	1	1	3	4	4	4	1	2	4
Fullerton:											
FuC2	2	2	2	1	3	4	4	4	2	2	4
FuD2	3	2	2	1	3	4	4	4	2	2	4
Gullied land: Gd	4	4	3	3	3	4	4	4	3	3	4
Guthrie: Gu	3	2	2	1	3	1	2	2	2	2	1
Hampshire:											
HhC2	2	2	2	1	3	4	4	4	2	2	4
HhD2	3	2	2	1	3	4	4	4	2	2	4
HhE2	4	2	2	1	3	4	4	4	3	2	4
Hicks: HkC	2	1	1	1	3	4	4	4	1	2	4
Inman: InE2	4	3	3	3	2	4	4	4	4	2	4
Lobelville: Lb, Le	2	1	1	1	3	3	3	3	1	2	3
Lynville: Ly	2	1	1	1	3	3	3	3	1	2	3
Mimosa:											
MmD, MmF	4	4	3	2	3	4	4	4	4	2	4
MnC2	2	2	2	1	3	4	4	4	2	2	4
MnD2	3	2	2	1	3	4	4	4	2	2	4
MnE2	4	2	2	1	3	4	4	4	3	2	4
MoB, MoC2	2	2	2	1	3	4	4	4	2	2	4
MoD2	3	2	2	1	3	4	4	4	2	2	4

See footnote at end of table.

TABLE 6.—*Suitability of soils for elements of wildlife habitat and kinds of wildlife*—Continued

Soil	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Pit ponds [1]	Openland wildlife	Woodland wildlife	Wetland wildlife
Mountview:											
MsB	1	1	1	1	3	4	4	4	1	2	4
MsC2	2	1	1	1	3	4	4	4	1	2	4
Rock land: Ro	4	4	4	3	2	4	4	4	4	2	4
Sango: Sa	2	1	1	1	3	3	3	2	1	2	3
Staser: St	2	1	1	1	3	4	4	4	1	2	4
Stiversville: SvE2	3	2	2	1	3	4	4	4	2	2	4
Taft: Ta	2	2	1	1	3	2	2	2	1	2	2
Talbott:											
TbD	4	3	2	2	3	4	4	4	3	2	4
TlC2	3	2	2	1	3	3	4	4	2	2	4
Tarklin:											
TrB	2	1	1	1	3	3	3	4	1	2	3
TrC2	2	1	1	1	3	4	4	4	2	2	4
Waynesboro:											
WaB2, WaC2	2	2	1	1	3	4	4	4	1	2	4
WaD2, WcD3	3	2	1	1	3	4	4	4	2	2	4

[1] Ratings do not apply to dam type ponds.

Use of the Soils in Engineering [6]

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, water storage facilities, erosion control structures, drainage systems, and sewage disposal systems. Among the properties most important to engineers are permeability, compaction characteristics, drainage, shrink-swell characteristics, grain size, plasticity, and soil reaction. Depth to the water table, depth to bedrock, and topography also are important.

Information concerning these and related soil properties is furnished in tables 7 and 8. The estimates and interpretations in these tables can be used to—

1. Make studies that will aid in selecting and developing industrial, commercial, residential, and recreational sites.
2. Make preliminary estimates of the engineering properties of soils in planning agricultural drainage systems, farm ponds, and irrigation systems.
3. Make preliminary evaluations that will aid in selecting locations for highways and airports and in planning detailed investigations at the selected locations.
4. Locate probable sources of sand and gravel and other construction material.
5. Correlate performance with soil mapping units to develop information that will be useful in designing and maintaining engineering structures.
6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.
7. Supplement other published information, such as maps, reports, and aerial photographs, that is used in preparation of engineering reports for a specific area.
8. Develop other preliminary estimates for construction purposes pertinent to the particular area.

With the soil map for identification of soil areas, the engineering interpretations reported in tables 7 and 8 can be useful for many purposes. It should be emphasized, however, that these interpretations may not eliminate the need for sampling and testing at the site of specific engineering works involving heavy loads and excavations deeper than the depth of layers here reported.

No test data are provided in this soil survey, but data for soils similar to those in DeKalb County can be found in the published soil surveys for Coffee, Putnam, and Warren Counties, Tenn. Copies of these surveys can be obtained through the representatives of the Soil Conservation Service or the Extension Service in those counties.

Some terms used by soil scientists have a special meaning in soil science that may not be familiar to engineers. These terms are defined in the Glossary at the back of this survey and in the "Soil Survey Manual" (*5*).

Engineering Classification Systems

Engineers use two systems for classifying soils. The AASHO system (*1*) was developed by the American Association of State Highway Officials. The Unified system (*8*) was developed at the Waterways Experiment

[6] JOE D. CARMACK, soil hydraulics engineer, Soil Conservation Service, assisted with the preparation of this section.

TABLE 7.—*Estimated engineering*

Soil series and map symbols	Depth to seasonal high water table	Depth to bedrock	Depth from surface	Classification: Dominant USDA texture
	Ft.	*Ft.*	*In.*	
Armour: ArB, ArC	10+	4–10	0–12	Silt loam
			12–38	Silty clay loam
			38–55	Silty clay loam
Arrington: At	3–10	4–10	0–60	Silt loam
Bodine: BoD, BoF, BrF	10+	5–12	0–43	Cherty silt loam
			43–79	Cherty silty clay loam
Mapping unit BrF is about 80 percent Bodine soils and 20 percent Rock land.				
Capshaw: CaB	2–3	3–6	0–15	Silt loam
			15–26	Silty clay loam
			26–60	Clay
Christian:				
CcC2, CcD2, CcE2	10+	4–7	0–7	Cherty silt loam
			7–17	Silty clay loam
			17–65	Clay
ChC2	10+	4–7	0–7	Silt loam
			7–65	Clay
CnC3	10+	4–7	0–6	Silty clay
			6–60	Clay
Dellrose: DeE, DeF	10+	6–15	0–20	Cherty silt loam
			20–70	Cherty silty clay loam
Dickson: DkA, DkB	2–3	12–20	0–7	Silt loam
			7–24	Silt loam
			24–38	Silt loam
			38–60	Clay
Dowellton: DoC	0–2	2–5	0–5	Silt loam
			5–48	Clay
Egam: Eg	2–3	3–7	0–15	Silt loam
			15–28	Silty clay loam
			28–56	Silty clay loam
Ennis:				
Eh	3–10	5–10	0–60	Cherty silt loam
En	3–10	5–10	0–35	Silt loam
			35–60	Cherty silt loam
Etowah:				
EtC	10+	6–20	0–12	Cherty silt loam
			12–65	Cherty silty clay loam
EwB	10+	6–20	0–7	Silt loam
			7–65	Silty clay loam
Fullerton: FuC2, FuD2	10+	6–30	0–8	Cherty silt loam
			8–18	Cherty silty clay loam
			18–60	Cherty clay
Gullied land: Gd.				
No valid estimates can be made.				
Guthrie: Gu	0–2	10–30	0–30	Silt loam
			30–60	Silty clay loam or silt loam
Hampshire: HhC2, HhD2, HhE2	6–10+	3–6	0–7	Silt loam
			7–30	Silty clay loam and clay
			30–40	Clay loam

See footnote at end of table.

properties of soils

Classification—Continued		Percentage passing sieve—			Permeability	Available water capacity	Reaction [1]	Shrink-swell potential
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					In./hr.	*In./in. of soil*	*pH*	
ML	A-4	100	90-100	85-95	0. 63-2. 0	0. 20	5. 1-6. 0	Low.
CL	A-6	100	90-100	85-95	0. 63-2. 0	. 20	5. 1-5. 5	Low.
CL or MH	A-6 or A-7	85-100	75-100	60-95	0. 63-2. 0	. 17	5. 1-6. 0	Moderate.
ML or CL	A-4 or A-6	95-100	90-100	85-95	0. 63-2. 0	. 20	5. 6-7. 3	Low.
GM, GC, or ML	A-4	55-75	45-65	35-55	6. 3-20	. 10	4. 5-5. 0	Low.
GM or GC	A-2, A-4	30-50	25-45	20-40	6. 3-20	. 10	4. 5-5. 0	Low.
ML or CL	A-4	90-100	85-100	80-95	0. 63-2. 0	. 18	5. 1-5. 5	Low.
CL or MH	A-6	95-100	90-100	85-95	0. 63-2. 0	. 17	5. 1-5. 5	Low.
MH	A-7	90-100	85-100	75-95	0. 06-0. 2	. 16	5. 1-6. 5	Moderate.
ML or CL	A-6	70-90	65-85	55-70	0. 63-2. 0	. 12	5. 1-5. 5	Low.
CL or MH	A-6, A-7	85-95	70-85	60-70	0. 63-2. 0	. 13	4. 5-5. 5	Low.
MH	A-7	85-95	75-85	60-75	0. 20-0. 63	. 15	4. 5 5. 5	Moderate.
ML or CL	A-4	90-100	90-100	80-95	0. 63-2. 0	. 17	5. 1-5. 5	Low.
MH	A 7	90-100	90-100	80-95	0. 20-0. 63	. 15	4. 5-5. 0	Moderate.
MH or CL	A-6, A-7	90-100	90-100	80-95	0. 63-2. 0	. 17	5. 1-5. 5	Low.
MH	A-7	90-100	90-100	80-95	0. 20-0. 63	. 15	4. 5-5. 0	Moderate.
GM or ML	A-4	70-85	65-80	45-70	2. 0 6. 3	. 15	5. 1-6. 0	Low.
GC or CL	A-4 or A-6	70-90	55-85	45-75	2. 0-6. 3	. 14	5. 1 5. 5	Low.
ML	A-4	95-100	90-100	85-95	0. 63-2. 0	. 19	5. 1-5. 5	Low.
ML or CL	A-4	95-100	90-100	85-95	0. 63-2. 0	. 18	4. 5-5. 0	Low.
ML or CL	A-4 or A-6	95 100	90-100	85-95	0. 06-0. 63	. 16	4. 5-5. 0	Low.
MH	A-6 or A-7	75-95	70-85	65-90	0. 20-0. 63	. 16	4. 5-5. 0	Moderate.
ML or CL	A-4 or A-6	95-100	90-100	85-100	0. 20-0. 63	. 17	5. 1-6. 5	Low.
CH	A-7	95-100	90-100	85-95	0. 06-0. 20	. 12	5. 1-7. 8	High.
ML or CL	A-4	95-100	90-100	85-95	0. 63-2. 0	. 19	5. 6-6. 5	Low.
MH or CL	A-4 or A-6	90-100	85-100	80-95	0. 63-2. 0	. 18	6. 1-7. 3	Low.
MH or CL	A-6 or A-7	90-100	85-100	80-95	0. 20-0. 63	. 17	6. 1-7. 3	Moderate.
ML or CL	A-4	65-85	55-80	50-75	2. 0-6. 3	. 14	5. 1-6. 0	Low.
ML	A-4	95-100	80-95	75-85	2. 0-6. 3	. 17	5. 1-6. 0	Low.
ML, CL, or GM	A-4	60-90	50-85	45-80	2. 0-6. 3	. 13	5. 1-6. 0	Low.
ML or CL	A-4 or A-6	70-85	60-80	55-70	0. 63-2. 0	. 15	5. 1-5. 5	Low.
CL or MH	A-6	70-85	65-80	55-75	0. 63-2. 0	. 13	4. 5-5. 5	Low.
ML or CL	A-4 or A-6	95-100	90-100	85-95	0. 63-2. 0	. 19	5. 1-5. 5	Low.
CL or MH	A-6 or A-7	90-100	85-95	75-85	0. 63-2. 0	. 17	4. 5-5. 5	Low.
ML or CL	A-4	65-85	60-85	55-80	0. 63-2. 0	. 15	4. 5-5. 5	Low.
MH or CL	A-6 or A-7	75-90	70-85	70-85	0. 63-2. 0	. 13	4. 5-5. 5	Low.
MH	A-7	65-85	55-80	50-75	0. 63-2. 0	. 11	4. 5-5. 5	Moderate.
ML	A-4	95-100	90-100	85-95	0. 63-2. 0	. 18	4. 5-5. 5	Low.
ML or CL	A-4 or A 6	95-100	90-100	85-95	0. 06-0. 20	. 15	4. 5-5. 5	Low.
ML or CL	A-4	95-100	90-100	80-95	0. 63-2. 0	. 18	5. 1-5. 5	Low.
MH	A-7	85-100	80-100	75-95	0. 63-2. 0	. 14	4. 5-5. 5	Moderate.
CL or MH	A-6, A-7	80-95	75-90	60-85	0. 63-2. 0	. 14	4. 5-5. 5	Low.

TABLE 7.—*Estimated engineering*

Soil series and map symbols	Depth to seasonal high water table	Depth to bedrock	Depth from surface	Classification: Dominant USDA texture
	Ft.	*Ft.*	*In.*	
Hicks: HkC	10+	4–6	0–12	Silt loam
			12–36	Silty clay loam
			36–56	Clay loam
Inman: InE2	10+	2–5	0–5	Flaggy silt loam
			5–31	Flaggy silty clay and clay
Lobelville:				
Lb	1–3	4–10	0–60	Cherty silt loam
Le	1–3	4–10	0–60	Silt loam
Lynnville: Ly	1–3	4–8	0–58	Silt loam and silty clay loam
Mimosa:				
MmD, MmF	10+	2–5	0–6	Silty clay loam and clay
			6–48	Clay
MnC2, MnD2, MnE2	10+	2–5	0–6	Cherty silt loam
			6–50	Clay
MoB, MoC2, MoD2	10+	2–5	0–6	Silt loam
			6–51	Clay
Mountview: MsB, MsC2	10+	8–25	0–11	Silt loam
			11–30	Silty clay loam
			30–60	Clay
Rock land: Ro. No valid estimates can be made.				
Sango: Sa	2–3	6–25	0–24	Silt loam
			24–60	Silty clay loam and silt loam
Staser: St	3 10	5–10	0–60	Cherty silt loam
Stiversville: SvE2	10+	3–5	0–13	Loam
			13–58	Clay loam and loam
Taft: Ta	0–2	10–25	0–26	Silt loam
			26–63	Silt loam and silty clay loam
Talbott:				
TbD	10+	2–5	0–6	Silt loam to clay
			6–30	Clay
TlC2	10+	2–5	0–4	Silt loam
			4–27	Clay
Tarklin: TrB, TrC2	2–3	4–12	0–17	Cherty silt loam
			17–32	Cherty silt loam
			32–50	Cherty clay
Waynesboro:				
WaB2, WaC2, WaD2	10+	5–20	0–6	Loam
			6–12	Clay loam
			12–72	Clay
WcD3	10+	5–20	0–6	Clay loam
			6–70	Clay

[1] Without additions of lime.

properties of soils—Continued

Classification—Continued		Percentage passing sieve—			Permeability	Available water capacity	Reaction [1]	Shrink-swell potential
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
					In./hr.	*In./in. of soil*	*pH*	
ML	A–4	95–100	90–100	85–95	0. 63–2. 0	0. 18	4. 5–5. 5	Low.
CL or MH	A–4 or A–6	95–100	90–100	85–95	0. 63–2. 0	. 17	4. 5–5. 5	Low.
CL or MH	A–6 or A–7	75–95	70–90	60–95	0. 63–2. 0	. 17	4. 5–6. 5	Moderate.
CL or MH	A–4 or A–6	75–90	65–80	60–75	0. 20–0. 63	. 12	5. 1–6. 5	Low.
MH	A–6 or A–7	65–80	60–75	55–75	0. 20–0. 63	. 10	5. 1–7. 8	Moderate.
ML	A–4	70–90	60–80	50–75	0. 63–2. 0	. 15	5. 1–6. 0	Low.
ML	A–4	85–100	75–90	70–85	0. 63 -2. 0	. 18	5. 1–6. 0	Low.
ML or CL	A–6 or A–4	95–100	90–95	85–95	0. 63–2. 0	. 18	5. 6–7. 3	Low.
CL or MH	A–6 or A–7	95–100	90–100	80–95	2. 0–0. 63	. 12	4. 5–5. 5	Low.
MH–CH	A–7	95–100	90 -100	80–95	0. 20–0. 63	. 10	4. 5–7. 3	Moderate.
ML or CL	A–4	70–90	65–85	55–75	2. 0–0. 63	. 12	4. 5–5. 5	Low.
MH–CH	A–7	90–100	85–100	80–95	0. 20–0. 63	. 10	4. 5–7. 3	Moderate.
CL	A–4 or A–6	95–100	90–100	80–95	2. 0–0. 63	. 12	4. 5–5. 5	Low.
MH–CH	A–7	95–100	95–100	85–100	0. 20–0. 63	. 12	4. 5–7. 3	Moderate.
ML	A–4	95–100	90–100	85–95	0. 63–2. 0	. 20	4. 5–5. 5	Low.
CL or ML	A–6	95–100	90–100	85–95	0. 63–2. 0	. 17	4. 5–5. 5	Low.
MH	A–7	75–90	65–85	60–85	0. 63–2. 0	. 12	4. 5 5. 5	Moderate.
ML	A–4	95–100	90–100	85–100	0. 63–2. 0	. 20	4. 5–5. 0	Low.
ML or CL	A–4 or A–6	90–100	85–100	80–95	0. 06–0. 20	. 16	3. 5–5. 0	Low.
ML	A–4	70–90	60–80	55–75	2. 0–6. 3	. 16	5. 6–7. 3	Low.
ML	A–4	90–100	85–95	75–90	2. 0–6. 3	. 18	5. 0–5. 5	Low.
CL	A–4 or A–6	85–100	75–95	65–80	2. 0–6. 3	. 16	4. 5–6. 5	Low.
ML	A–4	95–100	95–100	85–95	0. 63–2. 0	. 20	4. 5–5. 5	Low.
ML or CL	A–6 or A–4	95–100	95–100	85–100	0. 06–0. 20	. 14	4. 5–5. 5	Low.
CL or MH	A–6, A–7	90–100	90–100	85–100	0. 63–2. 0	. 16	5. 1–5. 5	Low.
MH or CH	A–7	90–100	90–100	85–100	0. 20–0. 63	. 10	5. 1 -7. 8	Moderate.
CL	A–6	95–100	90–100	85–95	0. 63–2. 0	. 17	5. 1–5. 5	Low.
MH or CH	A–7	95–100	90–100	90–100	0. 20–0. 63	. 10	5. 1–7. 8	Moderate.
ML	A–4	70–80	60–75	55–70	0. 63–2. 0	. 14	4. 5–5. 5	Low.
ML or CL	A–4 or A–6	70–75	60–70	55–60	0. 06–0. 20	. 10	4. 5–5. 5	Low.
CL or MH	A–6 or A–7	65–75	55–65	50–65	0. 20–0. 63	. 10	4. 5–5. 5	Moderate.
ML	A–4	95–100	90–100	55–75	0. 63–2. 0	. 16	4. 5–5. 5	Low.
CL or MH	A–6 or A–7	90–100	85–95	55–85	0. 63–2. 0	. 17	4. 5–5. 5	Low.
MH	A–7 or A–6	90–100	85–95	55–80	0. 63–2. 0	. 17	4. 5–5. 5	Moderate.
CL	A–6	90–100	85–95	55–75	0. 63–2. 0	. 17	4. 5–5. 5	Low.
MH	A–7 or A–6	90–100	85–95	55–80	0. 63–1. 0	. 17	4. 5–5. 5	Moderate.

TABLE 8.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—
	Topsoil	Road fill	Highway location
Armour: ArB, ArC	Good	Fair: fair traffic-supporting capacity.	All features favorable
Arrington: At	Good	Fair: fair traffic-supporting capacity.	Frequent flooding
Bodine: BoD, BoF, BrF	Poor: coarse fragments	Good	Predominantly moderately steep and steep slopes; much angular chert.
Capshaw: CaB	Fair: high clay content below a depth of 26 inches.	Poor to fair: poor to fair traffic-supporting capacity.	Clayey subsoil; slow permeability.
Christian: CcC2, CcD2, CcE2, ChC2, CnC3.	Poor to fair: high clay content in subsoil; some coarse fragments.	Poor: poor traffic-supporting capacity.	Bedrock at a depth of 4 to 7 feet.
Dellrose: DeE, DeF	Poor: coarse fragments	Good to fair: good to fair traffic-supporting capacity.	Predominantly steep slopes; subject to sliding in cuts; 2 to 10 feet of creep material overlies clayey soil.
Dickson: DkA, DkB	Fair: seasonal wetness; fragipan.	Fair: fair traffic-supporting capacity.	Perched water table during wet periods.
Dowellton: DoC	Poor: wetness; high clay content in subsoil.	Poor: high shrink-swell potential; poor traffic-supporting capacity; wetness.	Fine-textured limestone bedrock at a depth of 2 to 5 feet; water table at surface in winter.
Egam: Eg	Good	Poor to fair: poor to fair traffic-supporting capacity.	Limestone bedrock at a depth of 3 to 7 feet; occasional flooding.
Ennis: Eh, En	Good for En. Poor for Eh; coarse fragments.	Fair: fair traffic-supporting capacity.	Occasional flooding
Etowah: EtC, EwB	Good	Fair: fair to poor traffic-supporting capacity.	Features favorable
Fullerton: FuC2, FuD2	Poor: coarse fragments; high clay content below a depth of 18 inches.	Fair to poor: fair to poor traffic-supporting capacity.	Strong to moderately steep slopes; much angular chert; bedrock at a depth of 6 to 30 feet.
Gullied land: Gd. No interpretations; properties too variable.			
Guthrie: Gu	Poor: wetness	Poor: wetness	Fragipan at a depth of 20 to 40 inches; ponding in depressions; poor drainage.
Hampshire: HhC2, HhD2, HhE2	Fair: high clay content between depths of 12 and 30 inches.	Poor: poor traffic-supporting capacity.	Bedrock at a depth of 3 to 6 feet.

interpretations of soils

Soil features affecting—Continued				
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions
Reservoir area	Embankments			
Moderate permeability	Fair to good stability	Good natural drainage	All features favorable	All features favorable.
Moderate permeability	Fair to good stability	Good natural drainage	All features favorable	Level relief.
Rapid permeability	Fair to good stability	Excessive drainage	Low available water capacity; rapid permeability; predominantly moderately steep and steep slopes.	Predominantly moderately steep and steep slopes.
Slow permeability; rock is at a depth of 3 to 6 feet; rock cavernous in places.	Poor stability below a depth of 26 inches.	Slow permeability	Slow permeability; medium available water capacity.	Clayey subsoil.
Moderately slow permeability.	Poor stability	Good natural drainage	Medium available water capacity.	Moderately steep and steep slopes in places; clayey subsoil.
Moderately rapid permeability.	Good stability	Good natural drainage	Predominantly steep slopes.	Predominantly steep slopes.
Fragipan at a depth of 20 to 34 inches; possible seepage in cherty clay below pan.	Poor to fair stability	Perched water table above fragipan during wet periods.	Fragipan limits root zone to uppermost 2 feet; slow permeability.	All features favorable.
Slow permeability; limestone bedrock cavernous in places.	High shrink-swell potential; clayey subsoil; difficult to compact.	Slow permeability; clayey subsoil.	Poor drainage; low available water capacity; slow permeability.	Clayey subsoil.
Moderately slow permeability; underlying limestone cavernous in places.	Fair to poor stability	Moderately slow permeability; subject to flooding.	All features favorable	Level relief.
Moderately rapid permeability.	Fair stability	Good natural drainage	All features favorable	Level relief.
Moderate permeability; limestone bedrock cavernous in places.	Fair stability	Good natural drainage	All features favorable	All features favorable.
Moderate permeability	Fair to poor stability	Good natural drainage	Medium available water capacity.	Strong to moderately steep slopes.
Features favorable	Fair to poor stability	Fragipan at a depth of 20 to 40 inches; slow permeability.	Poor drainage; shallow root zone.	Level relief.
Moderate permeability; bedrock at a depth of 3 to 6 feet; rock cavernous in places.	Clayey subsoil; poor stability; difficult to compact.	Good natural drainage	Medium available water capacity.	Bedrock at a depth of 3 to 6 feet; clayey subsoil; strong to steep slopes.

TABLE 8.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—
	Topsoil	Road fill	Highway location
Hicks: HkC	Good	Fair: fair to poor traffic-supporting capacity.	Bedrock at a depth of 4 to 6 feet.
Inman: InE2	Poor: coarse fragments	Poor: poor traffic-supporting capacity.	Bedrock at a depth of 2 to 5 feet.
Lobelville: Lb, Le	Good for Le. Poor for Lb; coarse fragments.	Fair: fair traffic-supporting capacity.	Frequent flooding; seasonal high water table.
Lynnville: Ly	Good	Fair: fair traffic-supporting capacity.	Frequent flooding; seasonal high water table.
Mimosa: MmD, MmF, MnC2, MnD2, MnE2, MoB, MoC2, MoD2.	Poor: high clay content in subsoil; few coarse fragments and rocks.	Poor: poor traffic-supporting capacity.	Outcrops of limestone bedrock in places; fine-textured subsoil.
Mountview: MsB, MsC2	Good	Fair: fair traffic-supporting capacity.	All features favorable
Rock land: Ro	Not suited	Not suited	Outcrops of limestone cover 25 to 90 percent of surface.
Sango: Sa	Fair: seasonal wetness	Fair: fair traffic-supporting capacity.	Seasonal perched water table
Staser: St	Good	Fair: fair traffic-supporting capacity.	Occasional flooding
Stiversville: SvE2	Good	Fair: fair traffic-supporting capacity.	Interbedded sandy limestone and shale bedrock at a depth of 3 to 5 feet.
Taft: Ta	Poor: wetness	Poor: wetness	Seasonal high water table; ponding; fragipan.
Talbott: TbD	Not suited	Poor: poor traffic-supporting capacity; rocks.	Outcrops of limestone cover 10 to 25 percent of the surface.
TlC2	Poor: high clay content in subsoil.	Poor: poor traffic-supporting capacity.	Outcrops of limestone in places; clayey subsoil.
Tarklin: TrB, TrC2	Poor: coarse fragments; wetness.	Fair: fair traffic-supporting capacity; seasonal wetness.	Perched water table during wet periods.
Waynesboro: WaB2, WaC2, WaD2, WcD3.	Fair: moderately high clay content below a depth of 12 inches.	Fair to poor: fair to poor traffic-supporting capacity.	All features favorable

interpretations of soils—Continued

Soil features affecting—Continued				
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions
Reservoir area	Embankments			
Moderate permeability; bedrock at a depth of 4 to 6 feet; rock cavernous in places.	Fair stability	Good natural drainage	All features favorable	All features favorable.
Bedrock at a depth of 2 to 5 feet; rock cavernous in places.	Fair to poor stability	Good natural drainage	Low available water capacity.	Bedrock at a depth of 2 to 5 feet.
Substratum cherty and porous in places.	Fair to good stability	Seasonal high water table; flooding or ponding; moderate permeability.	All features favorable	Level relief.
Moderate permeability	Fair to poor stability	Seasonal high water table; frequent flooding; moderate permeability.	All features favorable	Level relief.
Moderately slow permeability; limestone bedrock cavernous in places; bedrock exposed in places.	Poor stability	Good natural drainage	Moderately slow permeability in subsoil; medium available water capacity.	Clayey subsoil; outcrops of limestone bedrock; steep slopes in places.
Moderate permeability	High silt content in uppermost 2 or 3 feet; fair stability.	Good natural drainage	All features favorable	All features favorable.
Very rocky; limestone cavernous in places.	Very little soil material	Good natural drainage	Rocks	Rocks.
All features favorable	Poor to fair stability; erosion hazard.	Fragipan at a depth of about 2 feet; slow permeability.	Slow permeability	Level relief.
Moderately rapid permeability.	Poor stability	Good natural drainage	All features favorable	Level relief.
Bedrock cavernous in places; moderately rapid permeability.	Fair to good stability	Good natural drainage	All features favorable	Steep slopes.
All features favorable	Poor stability	Perched water table near surface; ponding; slow permeability.	Fragipan limits root zone; somewhat poor drainage.	Level relief.
Outcrops of limestone cover 10 to 25 percent of the surface.	Small amount of clayey soil between limestone outcrops.	Good natural drainage	Rocks	Outcrops of limestone cover 10 to 25 percent of surface.
Limestone bedrock cavernous in places; bedrock exposed in places.	Poor stability; clayey subsoil.	Good natural drainage	Moderately slow permeability in subsoil; medium available water capacity.	Outcrops of bedrock in places; clayey subsoil.
All features favorable	Fair to good stability	Perched water table above fragipan during wet periods.	Fragipan limits root zone; low available water capacity.	All features favorable.
Moderate permeability	Poor stability below a depth of 1 foot.	Good natural drainage	All features favorable	Moderately steep slopes in places.

Station and has been adopted by the United States Department of Defense.

In the AASHO system all soil material is classified in seven principal groups. The groups range from A–1, which consists of soils that have the highest bearing capacity, to A–7, which consists of soils that have the lowest strength when wet.

In the Unified system soils are identified as coarse grained (eight classes), fine grained (six classes), and highly organic (one class).

Classification in both systems is based on particle-size distribution and plasticity characteristics.

Soil scientists use the USDA textural classification (*5*). In this, the texture of the soil is determined according to the proportion of soil particles smaller than 2 millimeters in diameter, that is, the proportion of sand, silt, and clay. Textural modifiers, such as cherty and flaggy, are used as needed.

Table 7 shows the estimated classification of the soils in DeKalb County according to all three systems of classification.

Estimated Engineering Properties of Soils

Table 7 gives estimates of soil properties that are significant in engineering. Estimates are listed for the principal horizons of each soil in the county. The depth to bedrock is based on field observations.

Permeability is estimated for noncompacted soil material. The estimates are based on structure and consistence of the soil material and on field observations. Only a small amount of laboratory data was available.

Available water capacity, expressed as inches of water per inch of soil, is the capacity of soils to hold water available for use by most plants. It is the difference between the amount of soil water at field capacity and the amount at wilting point.

Soil reaction, or pH, is estimated on the basis of field observations and laboratory data.

Shrink-swell potential indicates the volume change to be expected in soil material as a result of change in moisture content. It is estimated mainly on the basis of the amount and type of clay in the soil. In general, soils classified as CH and A–7 have a moderate to high shrink-swell potential. Soils having a low shrink-swell potential are clean sands and gravel and most other nonplastic to slightly plastic soils.

Engineering Interpretations of Soils

Table 8 evaluates the suitability of each soil in the county as a source of topsoil and road fill and lists the soil features that affect highway construction and other engineering practices.

The soil material to a depth of 30 inches is considered as a source of topsoil. Very coarse textured and well-drained soils are the most suitable for road fill. There are few such soils in this county. Bodine and Fullerton soils are the most suitable.

Chert and gravel can be used for secondary and county roads but ordinarily are not strong enough for use in concrete structures or as base material for primary roads. Although chert can be used as a supplement where thick, coarse base material is required, crushed limestone is more satisfactory. Limestone can be obtained from small quarries, mostly in areas of Rock land.

Suitability of the soils for highways is affected by drainage, slope, and depth to bedrock. The Arrington, Staser, Lynnville, Egam, Ennis, and Lobelville soils in this county are flooded occasionally or have a seasonal high water table. Roads on these soils should have an embankment high enough to keep the roadway above the high water level. Ditches or underdrains are needed, commonly at the base of slopes in deposits of local alluvium, to keep water from seeping to the surface. Seepage into the backslopes of cuts is likely to cause the overlying material to slump or slide. Unstable slopes can be stabilized by planting close-growing vegetation, such as tall fescue and white clover or common bermudagrass.

Depth to bedrock and kind of rock are considered in determining the location of secondary roads in sloping or steep areas (fig. 20). The difficulty of excavation depends on the kind of rock. Also considered are the likelihood of slides or other soil movement and of seepage along or through the bedrock and the kind of material within or slightly below the subgrade. A layer of highly plastic clay, for example, impedes internal drainage and provides a poor foundation for roads. In some places the clay layer can be cut out before the pavement is laid. In low, flat, or poorly drained areas, where removal of this layer is not feasible, an embankment is needed so that the roadway is built well above the clay layer. Stones are likely to cause grading problems.

Farm ponds are adversely affected by a permeable substratum, by cavernous limestone, and by inadequate or insufficient material for embankments. Excessive seepage is likely if there is a permeable layer near the surface. If there are caves in the limestone, water is likely to seep through the permeable soil layer and into the cavernous rock.

Figure 20.—**Highway construction on Bodine, Mimosa, and Dellrose soils in soil association 3, showing deep cuts and massive limestone.**

Town and Country Planning

The information in this part of the survey can be used by community planners, developers, and individual land owners to determine the most suitable use for a particular area. Table 9 shows, for each soil in the county, the degree and kind of limitation for selected uses.

A rating of *slight* in table 9 indicates that the soil has no limitations, or only slight limitations that are easy to overcome. A rating of *moderate* indicates that limitations can normally be overcome by good planning, careful design, and good management. A rating of *severe* indicates limitations are difficult and costly to overcome and major reclamation is generally required.

The first column in table 9 refers to dwellings of three stories or less, schools, neighborhood shopping facilities, and other community and public facilities serviced by a public sewerage system. Soils that have favorable shrink-swell potential and good drainage are suitable for this purpose. Other factors considered are the flood hazard, the slope, the depth of the water table, and rock outcrops or stones.

The second column in table 9 refers to dwellings of three stories or less, schools, and neighborhood shopping facilities that require septic tank filter fields as a method of disposing of sewage. Soils used as filter fields should be well drained and free from flooding. Other factors considered are percolation, shrink-swell potential, slope, and depth to hard rock.

The column headed "Light industry" refers to buildings other than residences that are used for light industry, stores, and offices that have public or community sewerage disposal facilities. The soils most suitable have a slope gradient of less than about 10 percent and are more than 36 inches deep over hard rock. They also have good drainage, no flood hazard, low shrink-swell potential, and low corrosion potential.

Campsites, used for tents, small camping trailers, and the accompanying activities for outdoor living, should be suitable for heavy foot and vehicular traffic and require little site preparation other than shaping or leveling. Good sites are the well drained or moderately well drained soils that are not subject to flooding during periods of heavy use and, in all unsurfaced areas, have good potential for the production of vegetation. The most desirable sites are loamy soils that have a slope gradient of less than 12 percent. Soils that are sandy or clayey or that have strong slopes are limited in their use as campsites.

Picnic areas should require little site preparation. The most desirable soils are well drained or moderately well drained, have a slope gradient of less than 20 percent and, during periods of heavy use, have a water table below a depth of 3 feet and are not subject to flooding or ponding.

Intensive play areas are used for baseball, tennis, badminton, and other organized games. They are subject to heavy foot traffic and generally require a nearly level, firm surface and good drainage. Such areas should be free of coarse fragments and rock outcrops. The more desirable soils are well drained or moderately well drained and, during periods of heavy use, have a water table below a depth of 3 feet and are not subject to flooding or ponding. Soils that have a loamy surface layer and favorable permeability are suited to these uses.

Formation and Classification of the Soils

This section describes the major factors of soil formation, tells how these factors have affected the soils of DeKalb County, and explains some of the principal processes in horizon development. It also defines the current system for classifying soils and shows the classification of the soils by series and higher categories.

Factors of Soil Formation

Soil forms through the interaction of the five major soil-forming factors—climate, living organisms (especially vegetation), parent material, topography, and time. Each of these factors affects the formation of every soil, but the relative importance of each factor differs from place to place.

Climate and vegetation are the active factors that change parent material gradually into soil. Relief modifies the effects of climate and vegetation, mainly by its effect on runoff and temperature. The parent material also affects the kind of soil that is formed. Time is needed for changing the parent material into soil.

The five major factors that affect soil formation are described in the following paragraphs.

Climate

The climate in DeKalb County is characterized by mild winters, warm summers, and abundant rainfall. Presumably, it is similar to the climate under which the soils formed. A more complete discussion on climate is given in the section "General Nature of the County."

The warm, moist climate promotes rapid soil development. The warm temperatures permit rapid chemical reaction. Large amounts of water move through the soil and remove dissolved or suspended materials. Plant remains decompose rapidly, and in this way the organic acids hasten the development of clay minerals and the removal of carbonates. Leaching and soil development continue almost the year round because the soil is frozen for only short periods, and then only to a depth of no more than 4 or 5 inches.

The climate is fairly uniform throughout the county; however, some local differences are caused by microrelief, slope, aspect, and drainage.

On the steep south- and west-facing slopes, annual and daily temperatures are higher, organic matter decays faster, and the freeze-thaw ratio is higher than on the north- and east-facing slopes. Because the freeze-thaw ratio is higher, there is more creep and soil erosion on the south- and west-facing slopes. Consequently, the soils are more shallow, have more rock outcrops, and are less fertile than the soils on the north- and east-facing slopes.

Living organisms

Plants, animals, insects, bacteria, and fungi are important in the formation of soils. They cause gains in organic-matter content and nitrogen, gains or losses in content of plant nutrients, and changes in structure and porosity.

Plants generally have a greater effect on soil formation than other living organisms. The native vegetation in this county was mostly hardwoods. The dominant trees on the

TABLE 9.—*Degree and kind of*

Series and symbols	Community facilities	
	Sites for dwellings with—	
	Public sewerage service [1]	Septic tanks [1]
Armour:		
ArB	Slight	Slight
ArC	Slight or moderate: slope	Slight or moderate: slope
Arrington: [4] At	Severe: flooding	Severe: flooding
Bodine:		
BoD	Moderate or severe: slope	Moderate or severe: slope
BoF	Severe: slope	Severe: slope
BrF	Severe: rock outcrops; slope	Severe: slope; rock outcrops
Capshaw: CaB	Moderate: wetness	Severe: slow percolation
Christian:		
CcC2	Slight or moderate: slope	Severe: slow percolation
CcD2	Moderate or severe: slope	Severe: slow percolation; slope
CcE2	Severe: slope	Severe: slope; slow percolation
ChC2	Slight or moderate: slope	Severe: slow percolation
CnC3	Slight or moderate: slope	Severe: slow percolation
Dellrose: DeE, DeF	Severe: slope	Severe: slope
Dickson:		
DkA	Moderate: wetness; water table	Severe: slow percolation
DkB	Moderate: wetness; water table	Severe: slow percolation
Dowellton: DoC	Severe: water table; high shrink-swell potential.	Severe: slow percolation; high shrink-swell potential.
Egam: [4] Eg	Severe: flooding	Severe: flooding
Ennis: [4] Eh, En	Severe: flooding	Severe: flooding
Etowah:		
EtC	Slight and moderate: slope	Slight and moderate: slope
EwB	Slight	Slight
Fullerton:		
FuC2	Slight and moderate: slope	Slight
FuD2	Moderate and severe: slope	Moderate and severe: slope
Guthrie: Gu	Severe: water table	Severe: wetness; slow percolation
Hampshire:		
HhC2	Slight and moderate: slope	Moderate: moderately slow percolation.
HhD2	Moderate and severe: slope	Moderate and severe: moderately slow percolation; slope.
HhE2	Severe: slope	Severe: slope
Hicks: HkC	Slight and moderate: slope	Slight and moderate: slope
Inman: InE2	Moderate and severe: slope	Severe: slow percolation; slope
Lobelville: Lb, Le	Severe: flooding	Severe: flooding
Lynnville: Ly	Severe: flooding	Severe: flooding

See footnotes at end of table.

limitation for selected uses

Community facilities—Continued	Recreational facilities		
Light industry [2]	Campsites [1]	Picnic areas [1]	Intensive play areas [3]
Slight	Slight	Slight	Moderate: slope.
Moderate: slope	Slight or moderate: slope	Slight or moderate: slope	Severe: slope.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.
Moderate or severe: slope	Slight, moderate, or severe: slope.	Moderate or severe: slope; coarse fragments.	Severe: slope; coarse fragments.
Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Severe: slope	Severe: slope; rock outcrops	Severe: slope; rock outcrops	Severe: rock outcrops; slope.
Moderate: water table	Moderate: slow permeability	Slight	Moderate: slow permeability; slope.
Moderate: slope	Moderate: moderately slow permeability.	Slight or moderate: slope	Severe: slope.
Severe: slope	Moderate or severe: slope; moderately slow permeability.	Moderate or severe: slope	Severe: slope.
Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Moderate: slope	Moderate: moderately slow permeability; slope.	Slight or moderate: slope	Severe: slope.
Moderate: slope	Severe: clayey surface layer	Severe: clayey surface layer	Severe: slope; clayey surface layer.
Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Moderate: water table	Moderate: slow permeability	Slight	Moderate: slow permeability.
Moderate: water table	Moderate: slow permeability	Slight	Moderate: slow permeability; slope.
Severe: high shrink-swell potential; water table.	Severe: wetness	Severe: water table	Severe: water table.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.
Slight to moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Moderate and severe: slope.
Slight	Slight	Slight	Moderate: slope.
Moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Severe: slope.
Moderate and severe: slope	Moderate and severe: slope	Moderate and severe: slope	Severe: slope.
Severe: water table	Severe: water table	Severe: water table	Severe: water table.
Moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Severe: slope.
Moderate and severe: slope	Moderate and severe: slope	Moderate and severe: slope	Severe: slope.
Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Severe: slope.
Moderate and severe: slope	Severe: slope	Severe: slope	Severe: slope.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.

TABLE 9.—*Degree and kind of*

Series and symbols	Community facilities	
	Sites for dwellings with—	
	Public sewerage service [1]	Septic tanks [1]
Mimosa:		
MmD	Severe: rock outcrops; slope	Severe: slow percolation; rock outcrops.
MmF	Severe: rock outcrops; slope	Severe: slow percolation; slope; rock outcrops.
MnC2	Slight and moderate: slope	Severe: slow percolation
MnD2	Moderate and severe: slope	Severe: slow percolation; slope
MnE2	Severe: slope	Severe: slow percolation; slope
MoB	Slight	Severe: slow percolation
MoC2	Slight and moderate: slope	Severe: slow percolation
MoD2	Moderate and severe: slope	Severe: slow percolation
Mountview:		
MsB	Slight	Slight
MsC2	Slight and moderate: slope	Slight and moderate: slope
Sango: Sa	Moderate: water table	Severe: slow percolation; water table
Staser: St	Severe: flooding	Severe: flooding
Stiversville: SvE2	Moderate and severe: slope	Moderate and severe: slope
Taft: Ta	Severe: water table	Severe: water table; slow percolation
Talbott:		
TbD	Severe: rock outcrops; slope	Severe: slow percolation; slope; rock outcrops.
TlC2	Slight and moderate: slope	Severe: slow percolation
Tarklin:		
TrB	Moderate: wetness; water table	Severe: slow percolation
TrC2	Moderate: wetness; water table; slope	Severe: slow percolation
Waynesboro:		
WaB2	Slight	Slight
WaC2	Slight and moderate: slope	Slight and moderate: slope
WaD2	Severe: slope	Moderate and severe: slope
WcD3	Moderate and severe: slope	Moderate and severe: slope

[1] Limitation is slight if slope is 0 to 8 percent, moderate if 8 to 15 percent, and severe if more than 15 percent.
[2] Limitation is slight if slope is 0 to 6 percent, moderate if 6 to 15 percent, and severe if more than 15 percent.

limitation for selected uses—Continued

Community facilities—Continued	Recreational facilities		
Light industry [2]	Campsites [1]	Picnic areas [1]	Intensive play areas [3]
Severe: slope; rock outcrops	Moderate and severe: slope; rock outcrops.	Moderate through severe: texture of surface layer; slope; rock outcrops.	Severe: slope; rock outcrops.
Severe: slope; rock outcrops	Severe: slope	Severe: slope; rock outcrops	Severe: slope; rock outcrops.
Moderate: slope	Moderate: slope; moderately slow permeability.	Slight and moderate: slope	Severe: slope.
Severe: slope	Severe and moderate: slope	Moderate and severe: slope	Severe: slope.
Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Slight	Moderate: moderately slow permeability.	Slight	Moderate: slope; moderately slow permeability.
Moderate: slope	Moderate: moderately slow permeability; slope.	Slight and moderate: slope	Severe: slope.
Moderate and severe: slope	Moderate and severe: slope; moderately slow permeability.	Moderate and severe: slope	Severe: slope.
Slight	Slight	Slight	Moderate: slope.
Moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Severe: slope.
Moderate: water table	Moderate: water table; slow permeability.	Moderate: water table	Moderate: water table.
Severe: flooding	Severe: flooding	Moderate: flooding	Moderate: flooding.
Moderate and severe: slope	Moderate and severe: slope	Moderate and severe: slope	Severe: slope.
Severe: water table	Severe: water table	Severe: water table	Severe: water table.
Severe: slope; rock outcrops	Moderate and severe: rock outcrops; slope.	Moderate and severe: rock outcrops; slope.	Severe: slope; rock outcrops.
Slight and moderate: slope	Moderate: moderately slow permeability; slope.	Slight and moderate: slope	Moderate and severe: moderately slow permeability; slope.
Moderate: water table; wetness	Moderate: slow permeability	Slight	Moderate: slow permeability; slope.
Moderate: slope; water table	Moderate: slow permeability; slope.	Slight and moderate: slope	Severe: slope.
Slight	Slight	Slight	Moderate: slope.
Moderate: slope	Slight and moderate: slope	Slight and moderate: slope	Severe: slope.
Moderate and severe: slope	Moderate and severe: slope	Moderate and severe: slope	Severe: slope.
Moderate and severe: slope	Moderate and severe: slope	Moderate and severe: slope	Severe: slope.

[3] Limitation is slight if slope is 0 to 2 percent, moderate if 2 to 6 percent, and severe if more than 6 percent.
[4] Limitation is slight if there is no flood hazard.

well-drained soils were oak, hickory, beech, and yellow-poplar. Sycamore, maple, gum, and water-tolerant oaks grew in the wet places. Eastern redcedar and hickory were dominant in some areas of Rock land and the Mimosa and Talbott very rocky soils. Because of the climate and the rapid decomposition of organic material, the content of organic matter in all the soils generally is low.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It determines the limits of the chemical and mineralogical composition of soil. In DeKalb County the parent material is residual material weathered from rocks and material transported by water, wind, or gravity, or by a combination of these.

The residual soils in the county weathered largely from limestone. Parent material and relief were the dominant factors affecting formation of these soils. The rock formations on the Highland Rim are cherty limestone and shale that weather slowly. Much of the Highland Rim is covered with loess 1 to 3 feet thick.

The Central Basin is underlain by relatively soluble limestone. Because of the phosphorus content of the limestone, the soils in the outer part of the Central Basin are medium to high in phosphorus and those in the inner part are low.

Transported materials are general alluvium and local alluvium, either of which can be young or old. Young alluvium that has been deposited recently consists of fresh material slightly altered by the soil-forming processes. Old alluvium is material that has been deposited long enough for horizon formation.

Most deposits of old and young general alluvium are on the floors and some of the lower side slopes of stream valleys. Examples of terrace soils that formed in old alluvium and colluvium are the Armour, Capshaw, Etowah, and Waynesboro soils. The Arrington, Egam, Ennis, Lobelville, Lynnville, and Staser soils formed in young alluvium.

Topography

Topography, or relief, influences soil formation through its effect on drainage, erosion, plant cover, and soil temperature. Most of the slopes in DeKalb County range from 0 to 40 percent, but in some parts, especially near the Center Hill Reservoir, they are as much as 85 percent.

The Guthrie, Taft, and other poorly drained soils formed in nearly level and depressional areas. Water stands or drains slowly from these areas, and the soils are poorly aerated and saturated for long periods. Thus, the amount of iron in the profile is reduced and gray colors have formed.

The well-drained, rolling soils generally are well aerated and are red, yellow, or brown. Relief is the dominant factor in soil formation on the steep slopes around the Highland Rim. Streams have dissected steep, rounded hills, and there are some outer spurs, or remnants of the Highland Rim, in the Central Basin.

The erosion of a plain that was originally the surface of the Highland Rim formed the present surface of the Central Basin. In the Central Basin slopes range from 0 to 40 percent. The outer part of the Central Basin is more sloping than the inner part.

Time

Generally a long time is required for the formation of soils that have distinct horizons. Differences in the length of time that parent material has been in place are commonly reflected in the degree of horizon development in the soil profile.

The Arrington and Armour soils are examples of soils that differ mainly because of differences in time. The Arrington soils are young alluvial soils that lack strongly developed horizons because the material has been in place only a short time. The Armour soils have been in place long enough for horizons to develop. Their B horizon is redder and slightly more clayey than the A horizon. The carbonates have leached out, and this soil is now strongly acid in contrast to the neutral or mildly alkaline Arrington soils, which are only slightly leached.

Processes of Soil Formation

Most soil profiles contain three major horizons—the A horizon, the B horizon, and the C horizon.

The A horizon is the surface layer. It can be either the horizon of maximum organic matter, called the A1, or the horizon of maximum leaching of dissolved or suspended materials, called the A2.

The B horizon, which lies immediately beneath the A horizon, is called the subsoil. It is a horizon of maximum accumulation of dissolved or suspended materials, such as iron or clay. It is typically firmer than the horizons just above and below it and commonly has blocky structure. The B horizon has not developed in young soils.

Below the B horizon is the C horizon, which is little affected by the soil-forming processes, but it can be highly modified by weathering.

The formation of horizons in the soils of DeKalb County is the result of one or more of the following processes: (1) The accumulation of organic matter, (2) the leaching of calcium carbonates and bases, (3) the reduction and transfer of iron, and (4) the formation and translocation of silicate clay minerals. In most of the soils more than one of these processes has been active in the development of horizons.

The accumulation of organic matter in the upper part of the profile is important because this accumulation results in the formation of an A1 horizon. The soils of this county are medium to very low in organic-matter content.

Carbonates and bases have been leached from nearly all of the soils in the county. The leaching of bases generally precedes the translocation of silicate clay minerals. Most of the soils in this county are moderately to strongly leached.

The reduction and transfer of iron, a process called gleying, is evident in the poorly drained soils in the county. This gleying is indicated by the gray color of the subsoil and indicates the reduction and loss of iron. Some horizons contain reddish-brown mottles and concretions, which are an indication of segregation of iron.

The translocation of clay minerals has contributed to horizon development in many of the soils in the county. The eluviated A2 horizon, which is above the B horizon, has a granular structure and is less clayey than the B horizon and lighter in color. The B horizon has accumulations of clay and clay films in pores and on ped surfaces. Soils

of this kind were probably highly leached of carbonates and soluble salts before translocation of silicate clays took place. The leaching of bases and the subsequent translocation of silicate clay are among the most important processes in horizon differentiation that have taken place in the soils of DeKalb County.

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older sytsem was adopted in 1938 (*2*) and revised later (*4*). The system currently used by the National Cooperative Soil Survey was developed in the early sixties (*3*) and adopted in 1956 (*6*). It is under continual study.

The current system of classification has six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 10 shows the classification of each soil series of DeKalb County by family, subgroup, and order, according to the current system.

Except for the soil series, the classes that make up the current system are defined briefly in the following paragraphs. Soil series is defined in the section "How This Survey Was Made." A detailed description of each soil series in the county is given in the section "Descriptions of the Soils."

Order.—Ten soil orders are recognized in the current system of classification. They are Alfisols, Aridisols, Entisols, Histosols, Inceptisols, Mollisols, Oxisols, Spodosols, Ultisols, and Vertisols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. Three exceptions are Entisols, Histosols, and Inceptisols, which occur in many climates.

Four of the soil orders are represented in DeKalb County. They are Alfisols, Inceptisols, Mollisols, and Ultisols.

TABLE 10.—*Soil series classified according to the current system of classification*

Series	Family	Subgroup	Order
Armour [1]	Fine-silty, mixed, thermic	Ultic Hapludalfs	Alfisols.
Arrington	Fine-silty, mixed, thermic	Cumulic Hapludolls	Mollisols.
Bodine	Loamy-skeletal, siliceous, thermic	Typic Paleudults	Ultisols.
Capshaw [2]	Fine, mixed, thermic	Ultic Hapludalfs	Alfisols.
Christian [3]	Clayey, kaolinitic, mesic	Typic Hapludults	Ultisols.
Dellrose	Fine-loamy, mixed, thermic	Humic Hapludults	Ultisols.
Dickson	Fine-silty, siliceous, thermic	Ochreptic Fragiudults	Ultisols.
Dowellton	Very fine, mixed, thermic	Vertic Ochraqualfs	Alfisols.
Egam	Fine, mixed, thermic	Cumulic Hapludolls	Mollisols.
Ennis	Fine-loamy, siliceous, thermic	Fluventic Dystrochrepts	Inceptisols.
Etowah [4]	Fine-loamy, mixed, thermic	Typic Paleudults	Ultisols.
Fullerton	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Guthrie	Fine-silty, siliceous, thermic	Typic Fragiaquults	Ultisols.
Hampshire	Fine, mixed, thermic	Ultic Hapludalfs	Alfisols.
Hicks	Fine-silty, mixed, thermic	Ultic Hapludalfs	Alfisols.
Inman	Fine, mixed, thermic	Ruptic-Alfic Eutrochrepts	Inceptisols.
Lobelville	Fine-loamy, siliceous, thermic	Aquic Fluventic Dystrochrepts	Inceptisols.
Lynnville	Fine-silty, mixed, thermic	Aquic Fluventic Hapludolls	Mollisols.
Mimosa	Fine, mixed, thermic	Typic Hapludalfs	Alfisols.
Mountview	Fine-silty, siliceous, thermic	Typic Paleudults	Ultisols.
Sango	Coarse-silty, siliceous, thermic	Ochreptic Fragiudults	Ultisols.
Staser	Fine-loamy, mixed, thermic	Cumulic Hapludolls	Mollisols.
Stiversville	Fine-loamy, mixed, thermic	Ultic Hapludalfs	Alfisols.
Taft	Fine-silty, siliceous, thermic	Aqueptic Fragiudults	Ultisols.
Talbott	Fine, mixed, thermic	Typic Hapludalfs	Alfisols.
Tarklin [3]	Fine-loamy, siliceous, mesic	Typic Fragiudults	Ultisols.
Waynesboro	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.

[1] The Armour soils in this county are taxadjuncts to the defined series. They are coarser textured than is appropriate to the classification shown; they are more than 15 percent materials coarser than very fine sand, including chert fragments in the upper 20 inches of the argillic horizon. This difference does not alter their usefulness and behavior.

[2] The Capshaw soils in this county are taxadjuncts to the defined series. They have a decrease of clay content of more than 20 percent of the maximum within 60 inches of the surface. This difference does not alter their usefulness and behavior.

[3] The Christian and Tarklin soils are taxadjuncts to the defined series. Their annual temperature is a few degrees warmer than is appropriate to the classification shown. This difference does not alter their usefulness and behavior.

[4] The Etowah soils in this county are taxadjuncts to the defined series. They have a surface layer with values greater than 3.5. This difference does not alter their usefulness and behavior.

Alfisols have an accumulation of aluminum and iron, argillic or natric horizons, and a base saturation of more than 35 percent.

Inceptisols are mineral soils that formed mostly in young but not recent material.

Mollisols are mineral soils that have a thick, dark-colored surface layer, moderate or strong structure, and a base saturation of more than 50 percent.

Ultisols have a clay-enriched B horizon that has less than 35 percent base saturation, which decreases with increasing depth.

Suborder.—Each order is divided into suborders, primarily on the basis of soil characteristics that produce classes having genetic similarity. A suborder has a narrower climatic range than an order. The criteria for suborders reflect either the presence or absence of waterlogging or soil differences resulting from climate or vegetation.

Great group.—Each suborder is divided into great groups on the basis of uniformity in the kind and sequence of genetic horizons.

Subgroup.—Each great group is divided into subgroups, one representing the central (typic) concept of the group, and others, called intergrades, made up of soils that have mostly the properties of one great group but also one or more properties of another great group.

Family.—Families are established within subgroups, primarily on the basis of properties important to plant growth. Some of these properties are texture, mineralogy, reaction, soil temperature, permeability, consistence, and thickness of horizons.

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Glossary

Acidity, soil. See Reaction, soil.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Base saturation. The degree to which material that has base-exchange properties is saturated with exchangeable cations other than hydrogen, expressed as a percentage of the cation-exchange capacity.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Claypan. A compact, slowly permeable soil horizon that contains more clay than the horizon above and below it. A claypan is commonly hard when dry and plastic or stiff when wet.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material,

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Creep, soil. The downward movement of masses of soil and soil material, primarily through the action of gravity. The movement is generally slow and irregular. It occurs most commonly when the lower part of the soil is nearly saturated with water, and it may be facilitated by alternate freezing and thawing.

Diversion, or diversion terrace. A ridge of earth, generally a terrace, that is built to divert runoff from its natural course and, thus, to protect areas downslope from the effects of such runoff.

Eluviation. The movement of material from one place to another within the soil, in either true solution or colloidal suspension. Soil horizons that have lost material through eluviation are said to be eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has been allowed to drain away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand.

The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleization. The reduction, translocation, and segregation of soil compounds, notably of iron, usually in the lower horizons, as a result of waterlogging with poor aeration and drainage; expressed in the soil by mottled colors dominated by gray. The soil-forming processes leading to the development of a gley soil.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon. The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Illuviation. The accumulation of material in a soil horizon through the deposition of suspended material and organic matter removed from horizons above. Since part of the fine clay in the B horizon (or subsoil) of many soils has moved into the B horizon from the A horizon above, the B horizon is called an illuvial horizon.

Loess. Fine-grained material, dominantly of silt-sized particles, that has been deposited by wind.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

pH value. A numerical means for designating relatively weak acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residual material. Unconsolidated, partly weathered mineral material that accumulates over disintegrating solid rock. Residual material is not soil but is frequently the material in which a soil has formed.

Root zone. The part of the soil that is penetrated, or can be penetrated, by plant roots.

Second bottom. The first terrace above the normal flood plain of a stream.

Sand. Individual rock or mineral fragments in soils having diameters ranging from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles, less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter). The separates recognized by the International Society of Soil Science are as follows: I (2.0 to 0.2 millimeter); II (0.2 to 0.02 millimeter); III (0.02 to 0.002 millimeter); IV (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically the part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surplus runoff so that it may soak into the soil or

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flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

GUIDE TO MAPPING UNITS

For complete information about a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. For complete information about a capability unit, read both the introduction "Crops and Pasture" and the description of the capability unit in that section. For information about the suitability of soils for woodland and as wildlife habitat, read the introduction to those sections and refer to the tables in each section. Other information is given in tables as follows:

Acreage and extent, table 3, page 10.
Estimated yields, table 4, page 38.
Woodland groups and factors in management, table 5, page 40.
Uses of the soils in engineering, tables 7 and 8, pages 46 through 53.
Uses of soils in town and country planning, table 9, page 56.

Map symbol	Mapping unit	Described on page	Capability unit		Woodland group
			Symbol	Page	Number
ArB	Armour silt loam, 2 to 5 percent slopes	10	IIe-1	34	2o7
ArC	Armour silt loam, 5 to 12 percent slopes	10	IIIe-1	35	2o7
At	Arrington silt loam	11	I-1	34	2o7
BoD	Bodine cherty silt loam, 5 to 20 percent slopes	12	VIs-1	37	3f8
BoF	Bodine cherty silt loam, 20 to 50 percent slopes	12	VIIs-1	37	4f3
BrF	Bodine-Rock land complex, 30 to 75 percent slopes	12	VIIs-1	37	4f3
CaB	Capshaw silt loam, phosphatic, 2 to 5 percent slopes	12	IIe-3	34	3o7
CcC2	Christian cherty silt loam, 5 to 12 percent slopes, eroded	13	IVe-2	36	3o7
CcD2	Christian cherty silt loam, 12 to 20 percent slopes, eroded	13	VIe-2	37	3o7
CcE2	Christian cherty silt loam, 20 to 30 percent slopes, eroded	13	VIe-2	37	3r8
ChC2	Christian silt loam, 5 to 12 percent slopes, eroded	14	IIIe-2	35	3o7
CnC3	Christian silty clay, 5 to 12 percent slopes, severely eroded	14	VIe-2	37	4c3
DeE	Dellrose cherty silt loam, 20 to 35 percent slopes	15	VIe-1	37	2r8
DeF	Dellrose cherty silt loam, 35 to 55 percent slopes	15	VIIe-1	37	2r8
DkA	Dickson silt loam, 0 to 2 percent slopes	15	IIw-1	35	3o7
DkB	Dickson silt loam, 2 to 5 percent slopes	16	IIe-3	34	3o7
DoC	Dowellton silt loam, 2 to 12 percent slopes	17	IVe-3	36	3w9
Eg	Egam silt loam	17	IIw-2	35	2o7
Eh	Ennis cherty silt loam	17	IIs-1	34	2o7
En	Ennis silt loam	18	I-1	34	2o7
EtC	Etowah cherty silt loam, 2 to 12 percent slopes	18	IIe-2	34	2o7
EwB	Etowah silt loam, 2 to 5 percent slopes	18	IIe-1	34	2o7
FuC2	Fullerton cherty silt loam, 5 to 12 percent slopes, eroded	19	IIIe-2	35	3o7
FuD2	Fullerton cherty silt loam, 12 to 25 percent slopes, eroded	19	VIe-2	37	3o7
Gd	Gullied land	19	VIIe-1	37	---
Gu	Guthrie silt loam	20	IVw-1	37	2w9
HhC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	21	IVe-2	36	3o7
HhD2	Hampshire silt loam, 12 to 20 percent slopes, eroded	21	VIe-2	37	3o7
HhE2	Hampshire silt loam, 20 to 30 percent slopes, eroded	21	VIe-2	37	3r8
HkC	Hicks silt loam, 5 to 12 percent slopes	22	IIIe-1	35	3o7
InE2	Inman flaggy silt loam, 12 to 30 percent slopes, eroded	23	VIe-2	37	3r8
Lb	Lobelville cherty silt loam	23	IIs-1	34	2w8
Le	Lobelville silt loam	23	I-1	34	2w8
Ly	Lynnville silt loam	24	I-1	34	2w8
MmD	Mimosa very rocky soils, 5 to 20 percent slopes	24	VIs-1	37	4x3
MmF	Mimosa very rocky soils, 20 to 40 percent slopes	24	VIIs-1	37	4x3
MnC2	Mimosa cherty silt loam, 5 to 12 percent slopes, eroded	25	IVe-2	36	3o7
MnD2	Mimosa cherty silt loam, 12 to 20 percent slopes, eroded	26	VIe-2	37	3o7
MnE2	Mimosa cherty silt loam, 20 to 30 percent slopes, eroded	26	VIe-2	37	3r8
MoB	Mimosa silt loam, 2 to 5 percent slopes	26	IIIe-3	35	3o7
MoC2	Mimosa silt loam, 5 to 12 percent slopes, eroded	26	IVe-2	36	3o7
MoD2	Mimosa silt loam, 12 to 20 percent slopes, eroded	26	VIe-2	37	3o7
MsB	Mountview silt loam, 2 to 5 percent slopes	27	IIe-1	34	3o7
MsC2	Mountview silt loam, 5 to 12 percent slopes, eroded	27	IIIe-1	35	3o7
Ro	Rock land	27	VIIs-1	37	4x3
Sa	Sango silt loam	28	IIw-1	35	3o7
St	Staser cherty silt loam	28	IIs-1	34	2o7
SvE2	Stiversville loam, 12 to 30 percent slopes, eroded	29	IVe-1	36	3o7
Ta	Taft silt loam	29	IIIw-1	36	3w8

Map symbol	Mapping unit	Described on page	Capability unit		Woodland group
			Symbol	Page	Number
TbD	Talbott very rocky soils, 5 to 20 percent slopes----------	30	VIs-1	37	4x3
TlC2	Talbott silt loam, 2 to 12 percent slopes, eroded----------	30	IVe-2	36	3c2
TrB	Tarklin cherty silt loam, 2 to 5 percent slopes----------	31	IIIe-4	36	3o7
TrC2	Tarklin cherty silt loam, 5 to 12 percent slopes, eroded--------	32	IIIe-4	36	3o7
WaB2	Waynesboro loam, 2 to 5 percent slopes, eroded----------	32	IIe-1	34	3o7
WaC2	Waynesboro loam, 5 to 12 percent slopes, eroded----------	32	IIIe-1	35	3o7
WaD2	Waynesboro loam, 12 to 20 percent slopes, eroded----------	32	IVe-1	36	3o7
WcD3	Waynesboro clay loam, 12 to 20 percent slopes, severely eroded--	33	VIe-1	37	4c3

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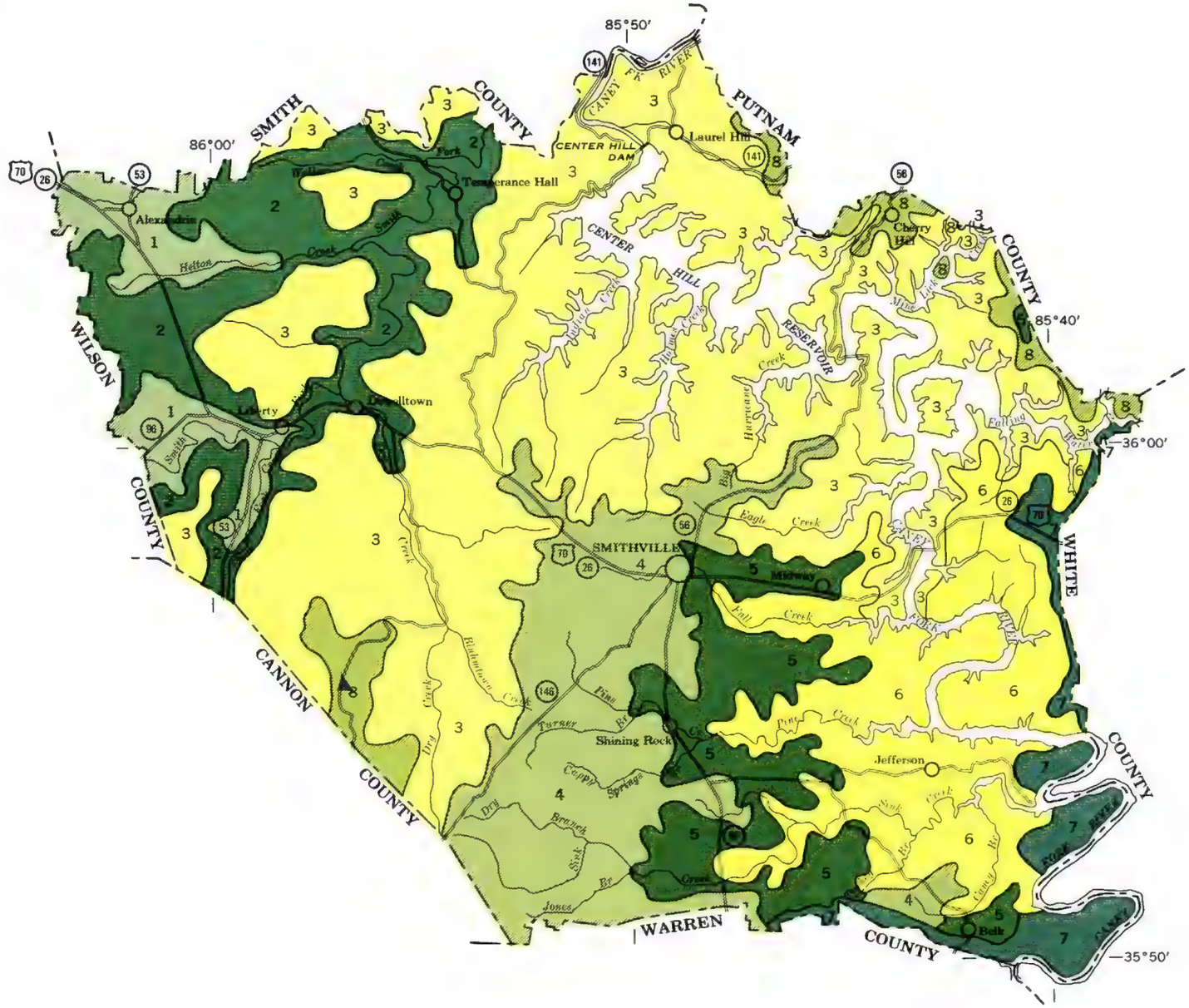
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TENNESSEE AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
DE KALB COUNTY, TENNESSEE

Scale 1:190080
1 0 1 2 3 4 Miles



SOIL ASSOCIATIONS *

1. Rock land-Talbott association: Rock land and well-drained, rolling and hilly soils that have a clayey subsoil; in the Central Basin
2. Mimosa-Rock land-Hampshire association: Rock land and well-drained, rolling to steep soils that have a clayey subsoil; in the Central Basin
3. Bodine-Mimosa-Dellrose association: Excessively drained and well-drained, rolling to steep, cherty soils and well-drained soils that have a clayey subsoil; in the Central Basin and on the Highland Rim
4. Dickson-Sango-Guthrie association: Moderately well drained and poorly drained, level and undulating, loamy soils that have a compacted layer (fragipan) in the subsoil; on the Highland Rim
5. Dickson-Mountview-Christian association: Moderately well drained and well drained, undulating to hilly, loamy soils that have a fragipan or clayey layer in the subsoil; on the Highland Rim
6. Christian-Bodine association: Well-drained, rolling to hilly soils that have a clayey subsoil and excessively drained, steep, cherty soils; on the Highland Rim
7. Waynesboro-Christian association: Well-drained, rolling and hilly soils that have a dominantly reddish, clayey subsoil; on the Highland Rim
8. Bodine-Fullerton association: Excessively drained and well-drained, rolling to steep, cherty soils; on the Highland Rim

* Unless otherwise stated, the texture given is that of the surface layer of the major soils in the association.

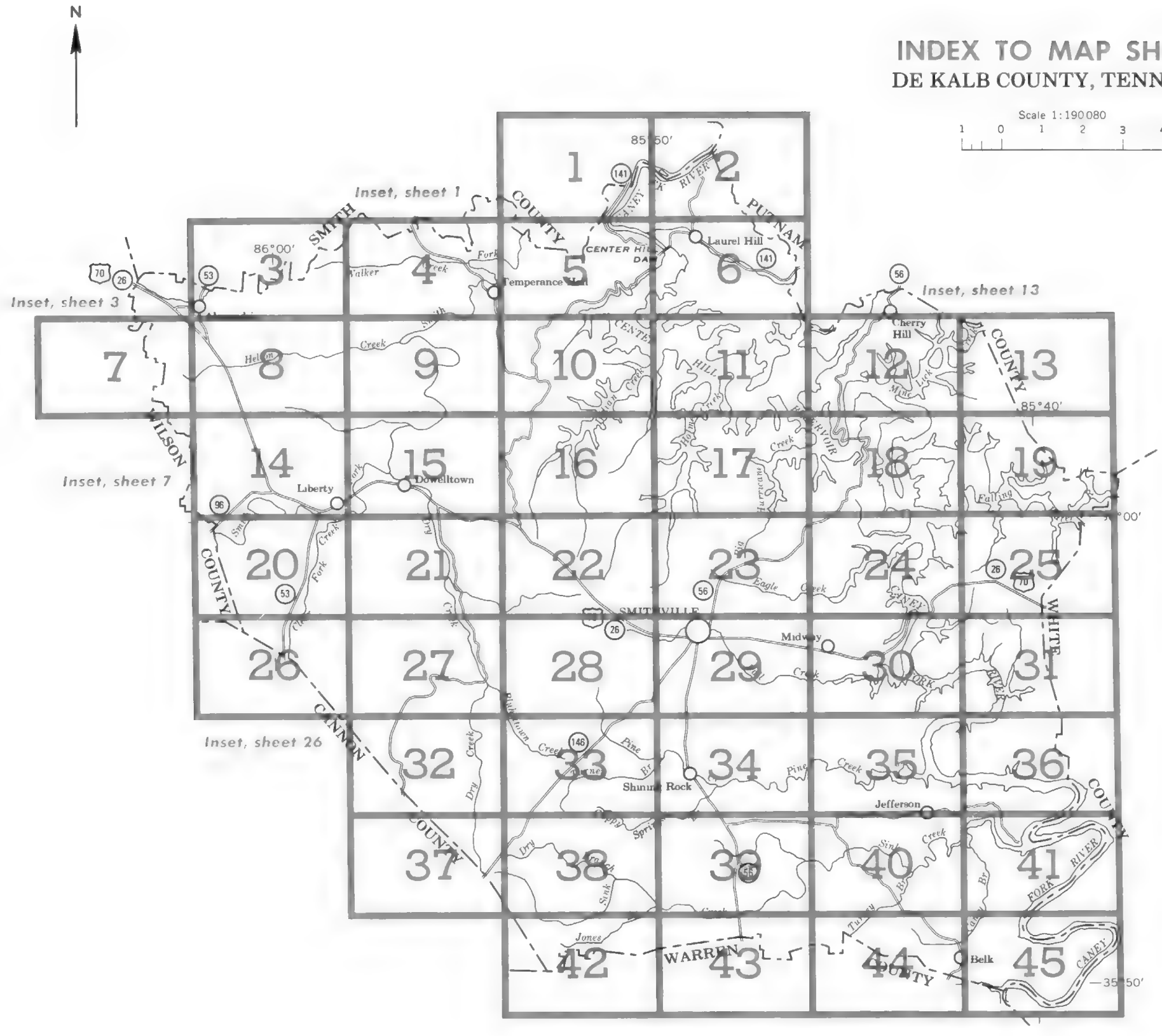
Published 1971

This map is for general planning. It shows only the major soils and does not contain sufficient detail for operational planning.

INDEX TO MAP SHEETS
DE KALB COUNTY, TENNESSEE

Scale 1:190080

1 0 1 2 3 4 Miles



SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, shows the slope. Most symbols without a slope letter are those of nearly level soils, but some are for land types that have a considerable range of slope. A final number, 2 or 3, in the symbol indicates that the soil is eroded or severely eroded.

SYMBOL	NAME
ArB	Armour silt loam, 2 to 5 percent slopes
ArC	Armour silt loam, 5 to 12 percent slopes
At	Arrington silt loam
BoD	Bodine cherty silt loam, 5 to 20 percent slopes
BoF	Bodine cherty silt loam, 20 to 50 percent slopes
BrF	Bodine-Rock land complex, 30 to 75 percent slopes
CaB	Capshaw silt loam, phosphatic, 2 to 5 percent slopes
CcC2	Christian cherty silt loam, 5 to 12 percent slopes, eroded
CcD2	Christian cherty silt loam, 12 to 20 percent slopes, eroded
CcE2	Christian cherty silt loam, 20 to 30 percent slopes, eroded
ChC2	Christian silt loam, 5 to 12 percent slopes, eroded
CnC3	Christian silty clay, 5 to 12 percent slopes, severely eroded
DeE	Dellrose cherty silt loam, 20 to 35 percent slopes
DeF	Dellrose cherty silt loam, 35 to 55 percent slopes
DkA	Dickson silt loam, 0 to 2 percent slopes
DkB	Dickson silt loam, 2 to 5 percent slopes
DoC	Dowellton silt loam, 2 to 12 percent slopes
Eg	Egam silt loam
Eh	Ennis cherty silt loam
En	Ennis silt loam
EtC	Etowah cherty silt loam, 2 to 12 percent slopes
EwB	Etowah silt loam, 2 to 5 percent slopes
FuC2	Fullerton cherty silt loam, 5 to 12 percent slopes, eroded
FuD2	Fullerton cherty silt loam, 12 to 25 percent slopes, eroded
Gd	Gullied land
Gu	Guthrie silt loam
HhC2	Hampshire silt loam, 5 to 12 percent slopes, eroded
HhD2	Hampshire silt loam, 12 to 20 percent slopes, eroded
HhE2	Hampshire silt loam, 20 to 30 percent slopes, eroded
HkC	Hicks silt loam, 5 to 12 percent slopes
InE2	Inman flaggy silt loam, 12 to 30 percent slopes, eroded
Lb	Lobelville cherty silt loam
Le	Lobelville silt loam
Ly	Lynnville silt loam
MmD	Mimosa very rocky soils, 5 to 20 percent slopes
MmF	Mimosa very rocky soils, 20 to 40 percent slopes
MnC2	Mimosa cherty silt loam, 5 to 12 percent slopes, eroded
MnD2	Mimosa cherty silt loam, 12 to 20 percent slopes, eroded
MnE2	Mimosa cherty silt loam, 20 to 30 percent slopes, eroded
MoB	Mimosa silt loam, 2 to 5 percent slopes
MoC2	Mimosa silt loam, 5 to 12 percent slopes, eroded
MoD2	Mimosa silt loam, 12 to 20 percent slopes, eroded
MsB	Mountview silt loam, 2 to 5 percent slopes
MsC2	Mountview silt loam, 5 to 12 percent slopes, eroded
Ro	Rock land
So	Sango silt loam
St	Staser cherty silt loam
SvE2	Stiversville loam, 12 to 30 percent slopes, eroded
Ta	Taft silt loam
TbD	Talbott very rocky soils, 5 to 20 percent slopes
TlC2	Talbott silt loam, 2 to 12 percent slopes, eroded
TrB	Tarklin cherty silt loam, 2 to 5 percent slopes
TrC2	Tarklin cherty silt loam, 5 to 12 percent slopes, eroded
WaB2	Waynesboro loam, 2 to 5 percent slopes, eroded
WaC2	Waynesboro loam, 5 to 12 percent slopes, eroded
WaD2	Waynesboro loam, 12 to 20 percent slopes, eroded
WcD3	Waynesboro clay loam, 12 to 20 percent slopes, severely eroded

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under

Tunnel

Buildings
- School
- Church

Mine and quarry

Gravel pit

Power line

Pipeline

Cemetery

Dams

Levee

Tanks

Well, oil or gas

Forest fire or lookout station

Windmill

BOUNDARIES

- National or state
- County
- Reservation
- Land grant
- Small park, cemetery, airport

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
  - Unclassified

Canals and ditches (CANAL)

Lakes and ponds
- Perennial (water, w)
- Intermittent (int)

Spring

Marsh or swamp

Wet spot

Alluvial fan

Drainage end

RELIEF

Escarpments
- Bedrock
- Other

Prominent peak

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stoniness
  - Stony
  - Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully
- Indian mound

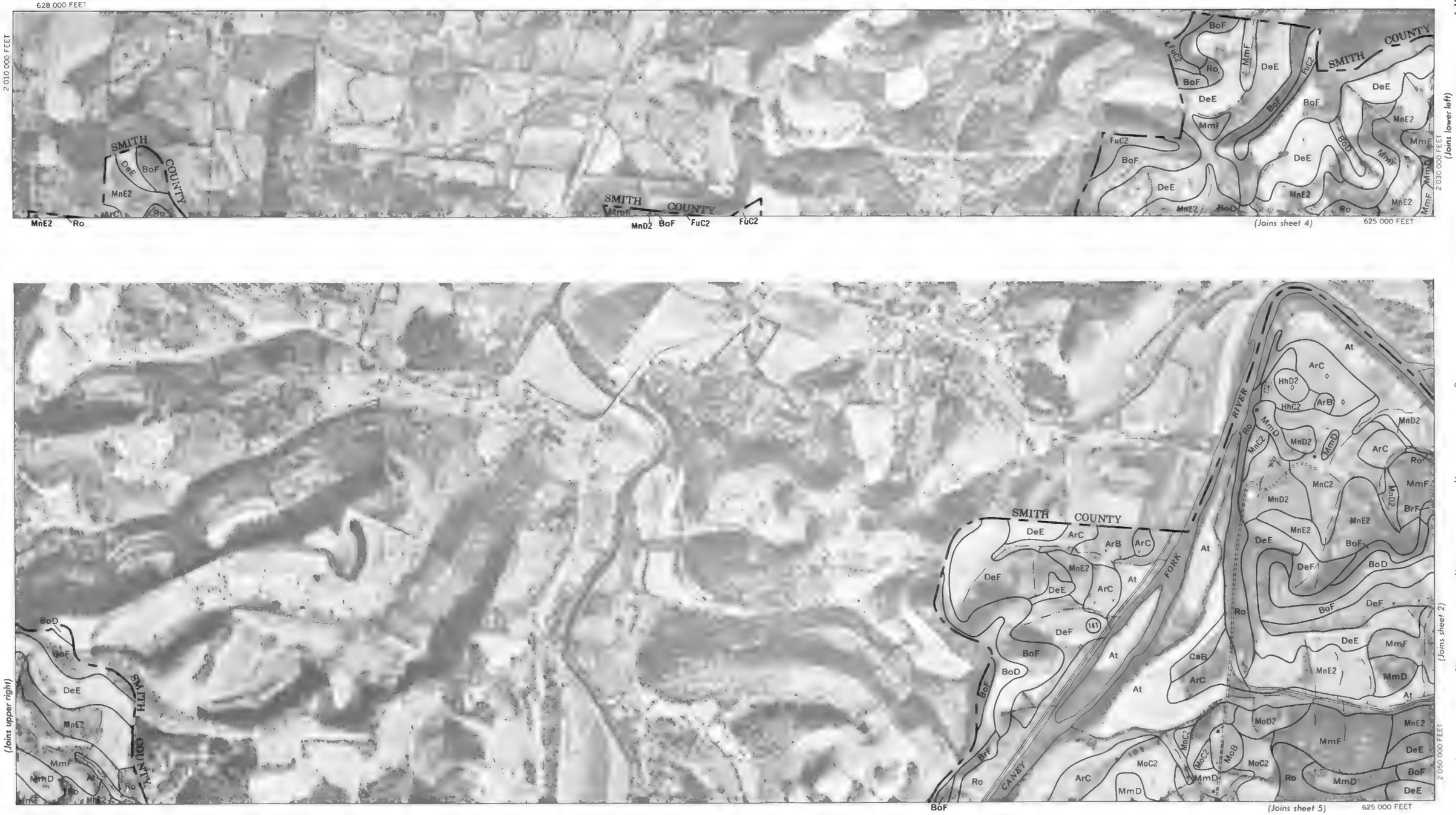
DE KALB COUNTY, TENNESSEE — SHEET NUMBER 1

638 000 FEET

2 030 000 FEET

628 000 FEET

2 010 000 FEET



1

N

1 Mile

5 000 Feet

Scale 1:15 840

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

N

1 Mile
5 000 Feet
Scale 1:15 840

DE KALB COUNTY, TENNESSEE NO. 2

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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625 000 FEET
618 200 FEET
1 990 000 FEET
1 981 600 FEET
612 000 FEET
2 010 000 FEET

SMITH COUNTY
WILSON COUNTY
ALEXANDRIA
Hickman Creek
Walker Creek
Dry Creek
NEW HOPE CEMETERY
EASTVIEW CEMETERY
ROOM CEMETERY
(Joins upper right)
(Joins lower left)
(Joins sheet 7)
(Joins sheet 4)
(Joins sheet 8)

N

1 Mile
5 000 Feet
Scale 1:15 840
0 1/4 1/2 3/4 1
0 1 000 2 000 3 000 4 000 5 000

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 4

4

N

625 000 FEET

(Joins inset, sheet 1)

2 010 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

0 0

1/4 1 000

1/2 2 000

3/4 3 000

1 4 000

5 000

(Joins sheet 3)

(Joins sheet 9)

(Joins sheet 5)

2 030 000 FEET

612 000 FEET

SMITH COUNTY

DE KALB COUNTY, TENNESSEE NO. 4

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DE KALB COUNTY, TENNESSEE — SHEET NUMBER 5

5

N

625 000 FEET

2 030 000 FEET

(Joins sheet 1)

(Joins sheet 4)

(Joins sheet 6)

(Joins sheet 10)

612 000 FEET

SMITH COUNTY

DE KALB COUNTY

CANEY FORK RIVER

Wolf Creek

Wolf Creek Island

BRASWELL CEMETERY

QUARRY

Long Branch

Cove Hollow Dock

CENTER HILL RESERVOIR

Scale 1:15 840

1 Mile

5 000 Feet

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625 000 FEET

(Joins sheet 2)

2 150 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 5)

(Joins sheet 11)

612 000 FEET

2 078 000 FEET

CENTER HILL RESERVOIR

CENTER HILL DAM

DAM

Power Plant

Laurel Hill

Smith Hollow

Christian Hollow

Wolf Creek

Moss Ridge

Merrill Hollow

Hardison Hollow

Moss Creek Church

PUTNAM COUNTY

water

DeE DeF BoD BoF MmF MmD MnE2 MnD2 MoD2 MoC2 FuC2 BrF ArC DoC Ro At St

141

DE KALB COUNTY, TENNESSEE NO. 6

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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DE KALB COUNTY, TENNESSEE — SHEET NUMBER 7

612 000 FEET

1 970 000 FEET

599 000 FEET

(Joins lower right)

1 985 700 FEET

(Joins sheet 14)

1 990 000 FEET

586 000 FEET

(Joins inset,sheet 3)

(Joins sheet 8)

(Joins upper left)

1 995 000 FEET

WILSON COUNTY

HIGHLAND MEMORIAL CEMETERY

Creek

Branch

Coon

Goose

N

1 Mile

5 000 Feet

Scale 1:15 840

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

8

N

612 000 FEET

(Joins sheet 3)

1 990 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 7)

(Joins sheet 14)

(Joins sheet 9)

2 010 000 FEET

599 000 FEET

ALEXANDRIA

HIGHLAND MEMORIAL CEMETERY

Upper Helton Church

Helton

BLUE CEMETERY

MANATTS CEMETERY

Branch

Creek

DE KALB COUNTY, TENNESSEE NO. 8

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

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DE KALB COUNTY, TENNESSEE — SHEET NUMBER 9

612 000 FEET

2 010 000 FEET

(Joins sheet 4)

(Joins sheet 8)

(Joins sheet 10)

(Join sheet 15)

2 030 000 FEET

599 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

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(10)

N

1 Mile

5 000 Feet

Scale 1:15 840

0 0 ¼ 1 000 ½ 2 000 ¾ 3 000 1 4 000 5 000

Ro 612 000 FEET (Joins sheet 5)

2 030 000 FEET

(Joins sheet 9)

2 050 000 FEET

599 000 FEET

(Joins sheet 11)

(Joins sheet 16)

CENTER HILL RESERVOIR

HAYES CEMETERY

MT GRAND CEMETERY

Cove Hollow

Wildcat Hollow

Hames Hollow

Cobb Hollow

Dale Ridge

INDIAN CREEK

JONES FORK

DE KALB COUNTY, TENNESSEE NO. 10

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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(Joins sheet 10)

612 000 FEET

2 050 000 FEET

(Joins sheet 6)

PUTNAM COUNTY

CENTER HILL RESERVOIR

Hale Branch

Floyd Branch

Little Hurricane Creek

HOLMES CREEK

(Joins sheet 12)

(Joins sheet 17)

599 000 FEET

2 070 000 FEET

MoD2

(11)

N

1 Mile

5 000 Feet

Scale 1:15 840

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

DE KALB COUNTY, TENNESSEE NO. 12

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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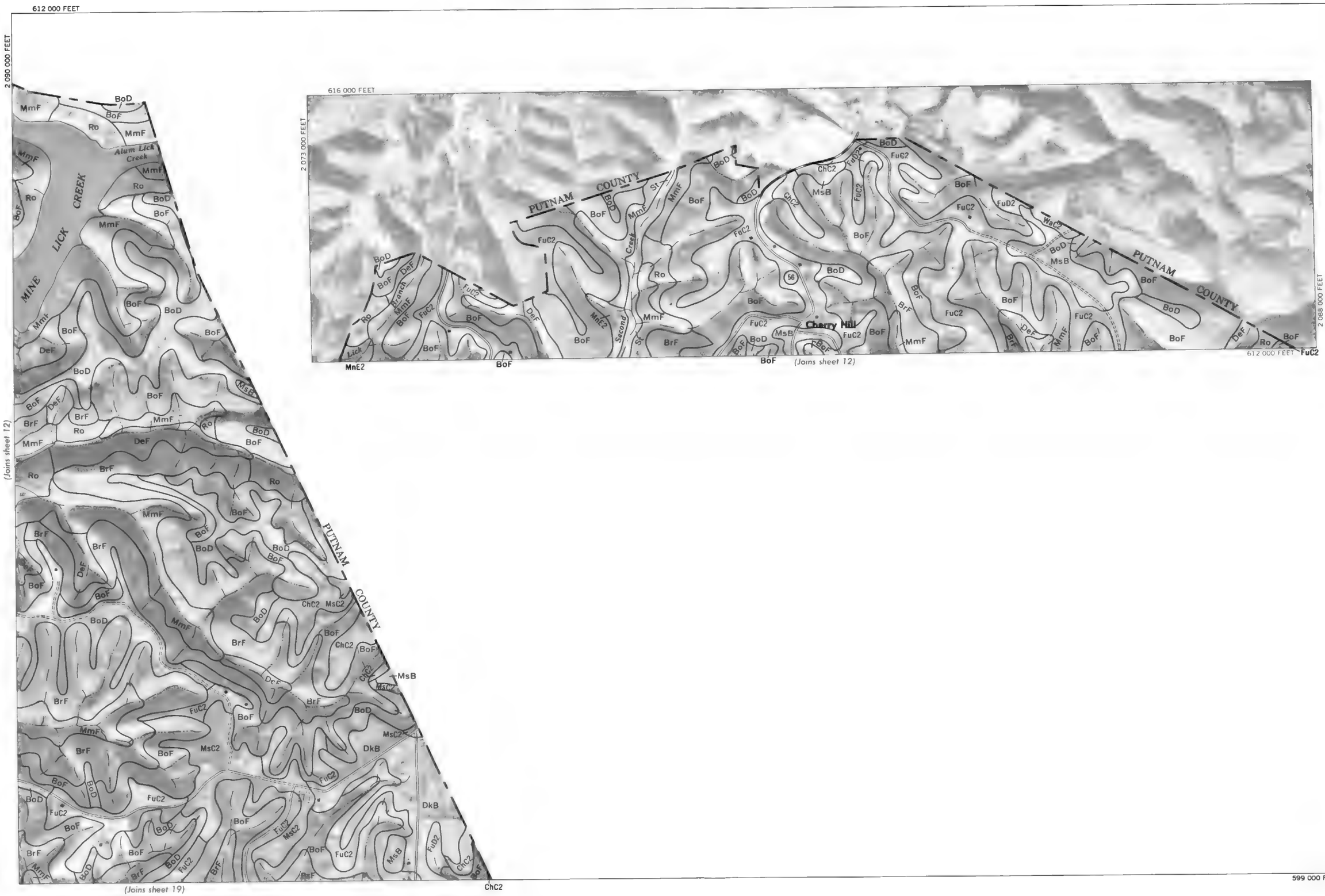

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DE KALB COUNTY, TENNESSEE NO. 14

N

599 000 FEET

2 010 000 FEET

(Joins sheet 9)

(Joins sheet 14)

(Joins sheet 16)

(Joins sheet 21)

586 000 FEET

2 030 000 FEET

Dismal

Fuller Chapel

Dowelltown

Liberty

SMITH FORK

DRY FORK

Branch

Creek

Scale 1:15 840

1 Mile

5 000 Feet

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

N

599 000 FEET

2 030 000 FEET

(Joins sheet 10)

FuC2

INDIAN CREEK

MILL BRANCH

PAIGE CEMETERY

TAYLOR CEMETERY

Jones Creek

Indian Creek

Branch

water

(Join sheet 15)

(Joins sheet 22)

(Joins sheet 17)

586 000 FEET

2 050 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

1 0 1 000 2 000 3 000 4 000 5 000

DE KALB COUNTY, TENNESSEE NO. 16

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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599 000 FEET

(Joins sheet 11)

2 050 000 FEET

CENTER HILL RESERVOIR

C R E E K

H O L M E S

H U R R I C A N E C R E E K

B I G

Ousey Cove Park

Shivhouse Hollow

HULLETT CEMETERY

(Joins sheet 16)

(Joins sheet 18)

(Joins sheet 23)

586 000 FEET

2 070 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

1 0 1 2 3 4 5 000

¼ ½ ¾ 1 000 2 000 3 000 4 000

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N

599 000 FEET

2 070 000 FEET

(Joins sheet 12)

(Joins sheet 17)

(Joins sheet 24)

(Joins sheet 19)

2 090 000 FEET

586 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

1 0 1 000 2 000 3 000 4 000 5 000

¼ ½ ¾

HURRICANE BRIDGE

CENTER HILL RESERVOIR

CAMP RELAX

Mullican Hollow

Buckner

The Narrows

BIG ISLAND

MmF

DE KALB COUNTY, TENNESSEE NO. 18

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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599 000 FEET

(Joins sheet 13)

2 090 000 FEET

(Joins sheet 18)

(Joins sheet 25)

2 110 000 FEET

586 000 FEET

CENTER HILL RESERVOIR

DRY CREEK

FALLING WATER RIVER

TAYLOR CREEK

PUTNAM COUNTY

WHITE COUNTY

N

1 Mile

5 000 Feet

Scale 1:15 840

0 1 000 2 000 3 000 4 000 5 000

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system: 1927 North American datum.

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 20

(20)

N

586 000 FEET

1 990 000 FEET

(Joins sheet 14)

At

1 Mile

5 000 Feet

Scale 1:15 840

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

SMITH FORK

WILSON COUNTY

CREEK

FORK

CLEAR Branch

Greenhill Ly

Anderson Hollow

Cave Springs Church

Pistole Hollow

Adamson Branch

Givens Hollow

QUARRY

St

(Joins sheet 21)

(Joins sheet 26)

573 000 FEET

2 010 000 FEET

DE KALB COUNTY, TENNESSEE NO. 20

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DE KALB COUNTY, TENNESSEE NO. 21

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

(Joins sheet 20)

(Join sheet 15)

(Joins sheet 22)

(Joins sheet 27)

586 000 FEET

573 000 FEET

2 030 000 FEET

21

N

Scale 1:15 840

1 Mile

5 000 Feet

0 1 000 2 000 3 000 4 000 5 000

0 ¼ ½ ¾ 1

586 000 FEET

(Joins sheet 16)

2 030 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 21)

(Joins sheet 28)

573 000 FEET

2 050 000 FEET

(Joins sheet 23)

Indian Creek Church

Snows Hill

Martins Chapel

De Kalb County School

MOUNT HOLLY CEMETERY

Hunt Hollow

Fusion Hollow

Egypt Hollow

Indian Creek

Camp Branch

Egypt Branch

DE KALB COUNTY, TENNESSEE NO. 22

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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DE KALB COUNTY, TENNESSEE — SHEET NUMBER 23

DE KALB COUNTY, TENNESSEE NO. 23

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

(Joins sheet 22)

586 000 FEET

2 050 000 FEET

(Joins sheet 17)

Holmes Creek Dock

Hurricane Creek

Big Eagle Creek

Phillipi

BAKER U CEMETERY

BONHAM CEMETERY

Elizabeth Chapel

MOUNT HOLLY CEMETERY

KENNEDY CEMETERY

Northside Church

(Joins sheet 24)

(Joins sheet 29)

573 000 FEET

2 070 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 24

(24)

N

586 000 FEET

2 070 000 FEET

(Joins sheet 18)

(Joins sheet 23)

(Joins sheet 30)

(Joins sheet 25)

2 090 000 FEET

573 000 FEET

1 Mile

5 000 Feet

0 1 000 2 000 3 000 4 000 5 000

Scale 1:15 840

1/4 1/2 3/4

Long Branch

Maynard Branch

EAGLE CREEK

CENTER HILL RESERVOIR

CANEY FORK RIVER

Sligo Dock

SLIGO BRIDGE

Railand Hollow

DE KALB COUNTY, TENNESSEE NO. 24

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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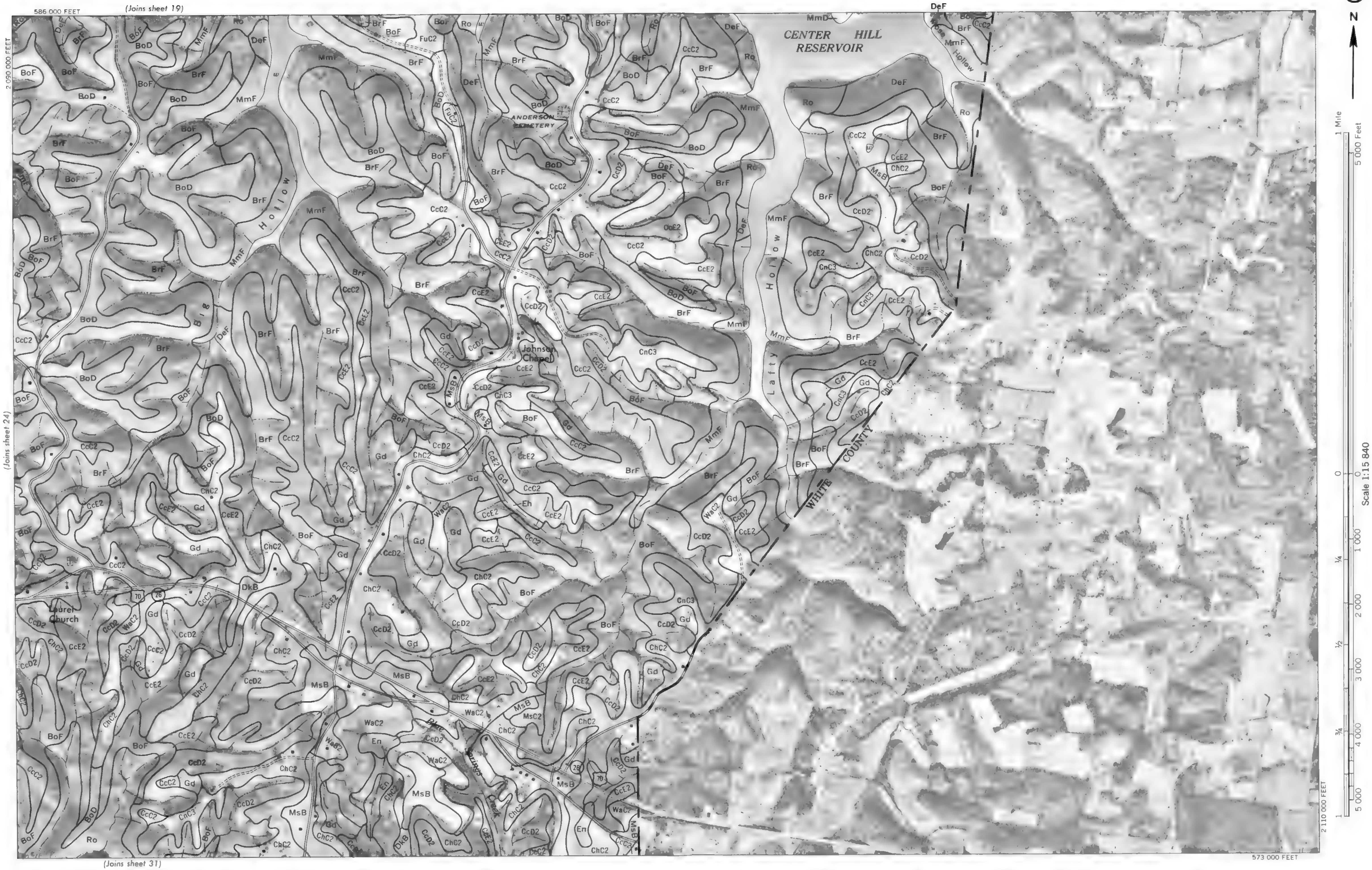

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

N

573 000 FEET

1 990 000 FEET

(Joins sheet 20)

(Joins lower right)

560 000 FEET

2 006 200 FEET

(Joins sheet 32)

556 200 FEET

2 010 000 FEET

(Joins sheet 27)

(Joins inset)

1 Mile

5 000 Feet

0

Scale 1:15 840

1/4 1/2 3/4 1

1 000 2 000 3 000 4 000 5 000

DE KALB COUNTY, TENNESSEE NO. 26

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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DE KALB COUNTY, TENNESSEE — SHEET NUMBER 27

27

N

573 000 FEET

2 010 000 FEET

(Joins sheet 21)

(Joins sheet 26)

(Joins sheet 28)

(Joins sheet 32)

560 000 FEET

Scale 1:15 840

1 Mile

5 000 Feet

Dry Creek Church

Pea Ridge Church

Mt Moriah

Round Hill

Grazier Hollow

Wilder Branch

Dry Creek

Blackstown Creek

TROUT FARM

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 28

28

N

573 000 FEET

2 030 000 FEET

(Joins sheet 22)

(Joins sheet 27)

(Joins sheet 33)

(Joins sheet 29)

2 050 000 FEET

560 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

1 5 000 | ¾ 4 000 | ½ 3 000 | ¼ 1 000 | 0 0

Egypt Hollow

Branch

Cross Roads

Mt. Herman Church

BRASWELL CEMETERY

SMITHVILLE

Fall Creek

Armory

Murphy Branch

70

26

146

DE KALB COUNTY, TENNESSEE NO. 28

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

30

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 30

573 000 FEET

(Joins sheet 24)

2 070 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 29)

(Joins sheet 35)

(Joins sheet 31)

2 090 000 FEET

560 000 FEET

Midway

SHORT CREEK

BRITCH CREEK

CANEY FORK RIVER

FALL CREEK

Hollow

Cave

Copper

DE KALB COUNTY, TENNESSEE NO. 30

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system: 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service and the University of Tennessee Agricultural Experiment Station

DE KALB COUNTY, TENNESSEE NO. 31

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

573 000 FEET

2 090 000 FEET

(Joins sheet 25)

(Joins sheet 30)

(Joins sheet 36)

560 000 FEET

2 110 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

0 1 000 2 000 3 000 4 000 5 000

0 ¼ ½ ¾ 1

(32)

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 32

N

560 000 FEET

2 010 000 FEET

(Joins inset sheet 26)

(Joins sheet 27)

(Joins sheet 33)

2 030 000 FEET

547 000 FEET

(Joins sheet 37)

1 Mile

5 000 Feet

Scale 1:15 840

1 5 000 ¾ 4 000 ½ 3 000 ¼ 2 000 0 1 000 0

DE KALB COUNTY, TENNESSEE NO. 32

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

N

560 000 FEET

2 030 000 FEET

(Joins sheet 28)

(Joins sheet 32)

(Joins sheet 34)

(Joins sheet 38)

547 000 FEET

2 050 000 FEET

Watkins

Watkins School

Pine Creek

New Home Church

Bluhmtown

JACOBS PILLAR CEMETERY

Turner Branch

Scale 1:15 840

1 Mile

5 000 Feet

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

34

N

560 000 FEET

(Joins sheet 29)

2 050 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 33)

MEMORIAL GARDENS CEMETERY

WHORTON SPRINGS CEMETERY

CANTRELL CEMETERY

Murphy Branch

Pine Creek

Shining Rock

Copper Springs

(Joins sheet 39)

547 000 FEET

2 070 000 FEET

(Joins sheet 35)

DE KALB COUNTY, TENNESSEE NO. 34

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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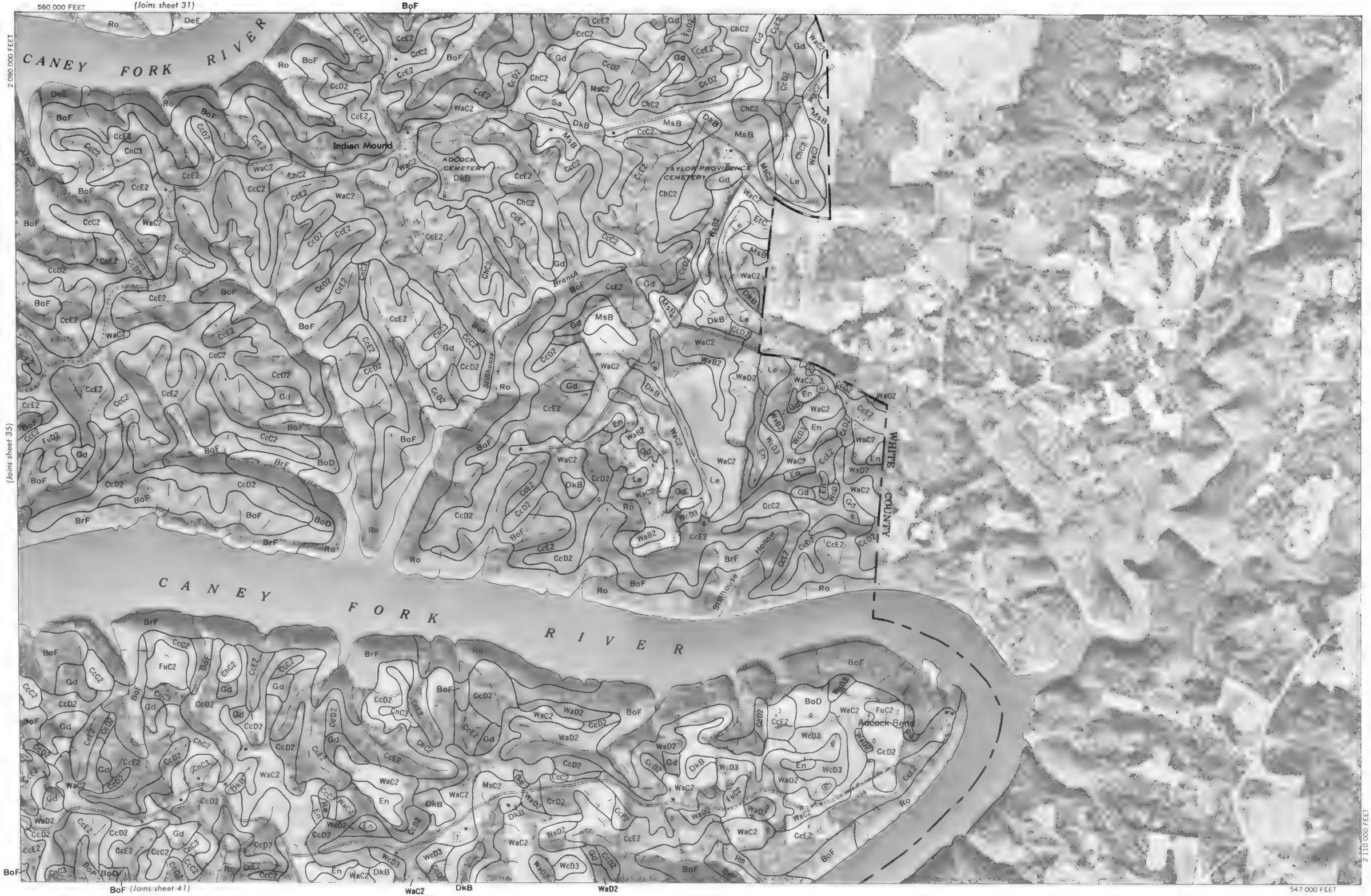
Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

(Joins sheet 34)
(Joins sheet 30)
(Joins sheet 36)
(Joins sheet 40)

560 000 FEET
2 070 000 FEET
2 090 000 FEET
547 000 FEET

New View School
Mount View Church
YOUNG BEND CEMETERY
LANDER CEMETERY
JACO CEMETERY
Pine Creek
Spanmill Branch
Copper Cave Hollow
PINE CREEK
CANEY FORK RIVER
Jefferson

35
N
1 Mile
5 000 Feet
Scale 1:15 840



Scale 1:15 840

1 Mile
5 000 Feet

DE KALB COUNTY, TENNESSEE NO. 36

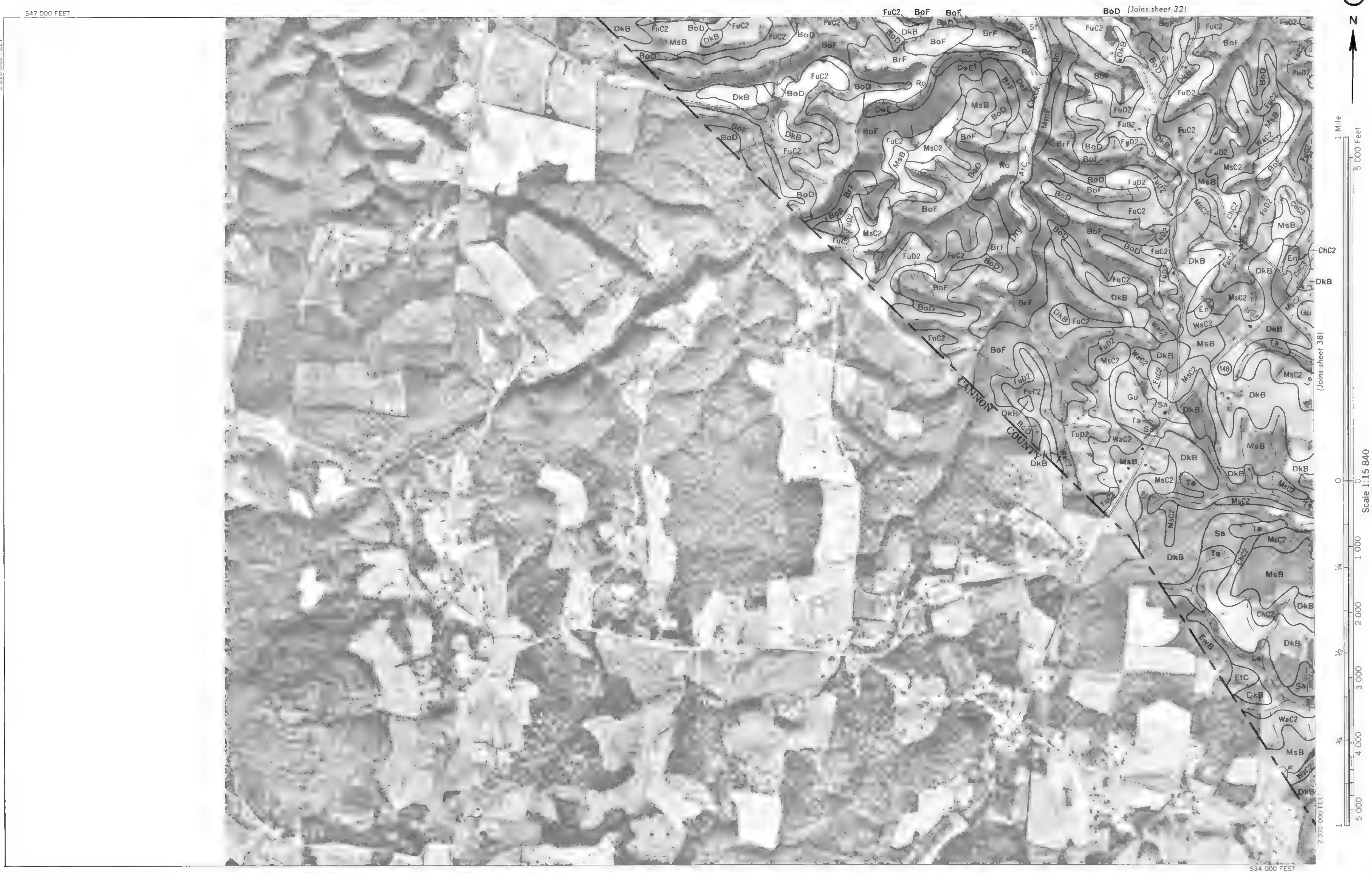
Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

DE KALB COUNTY, TENNESSEE NO. 37

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system 1927 North American datum.



DE KALB COUNTY, TENNESSEE — SHEET NUMBER 38

38

N

547 000 FEET

2 050 000 FEET

534 000 FEET

(Joins sheet 33)

(Joins sheet 37)

(Joins sheet 39)

(Joins sheet 42)

Scale 1:15 840

1 Mile

5 000 Feet

Pisgah

Cappy

Springs

Branch

Blue Springs

Bethel

BETHEL CEMETERY

Creek

Sink

Jones

DE KALB COUNTY, TENNESSEE NO. 38

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

DE KALB COUNTY, TENNESSEE NO. 39

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

(Joins sheet 38)

547 000 FEET

2 050 000 FEET

(Joins sheet 34)

(Joins sheet 40)

(Joins sheet 43)

534 000 FEET

2 070 000 FEET

N

1 Mile

5 000 Feet

Scale 1:15 840

Webbs Chapel

Bildad Church

ALLEN CEMETERY

Sink Creek

Sink Creek

Branch

N

547 000 FEET

(Joins sheet 35)

2 070 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

(Joins sheet 39)

(Joins sheet 44)

Kellonburg

Jefferson

Sink

Creek

Branch

WHITE CEMETERY

(Joins sheet 41)

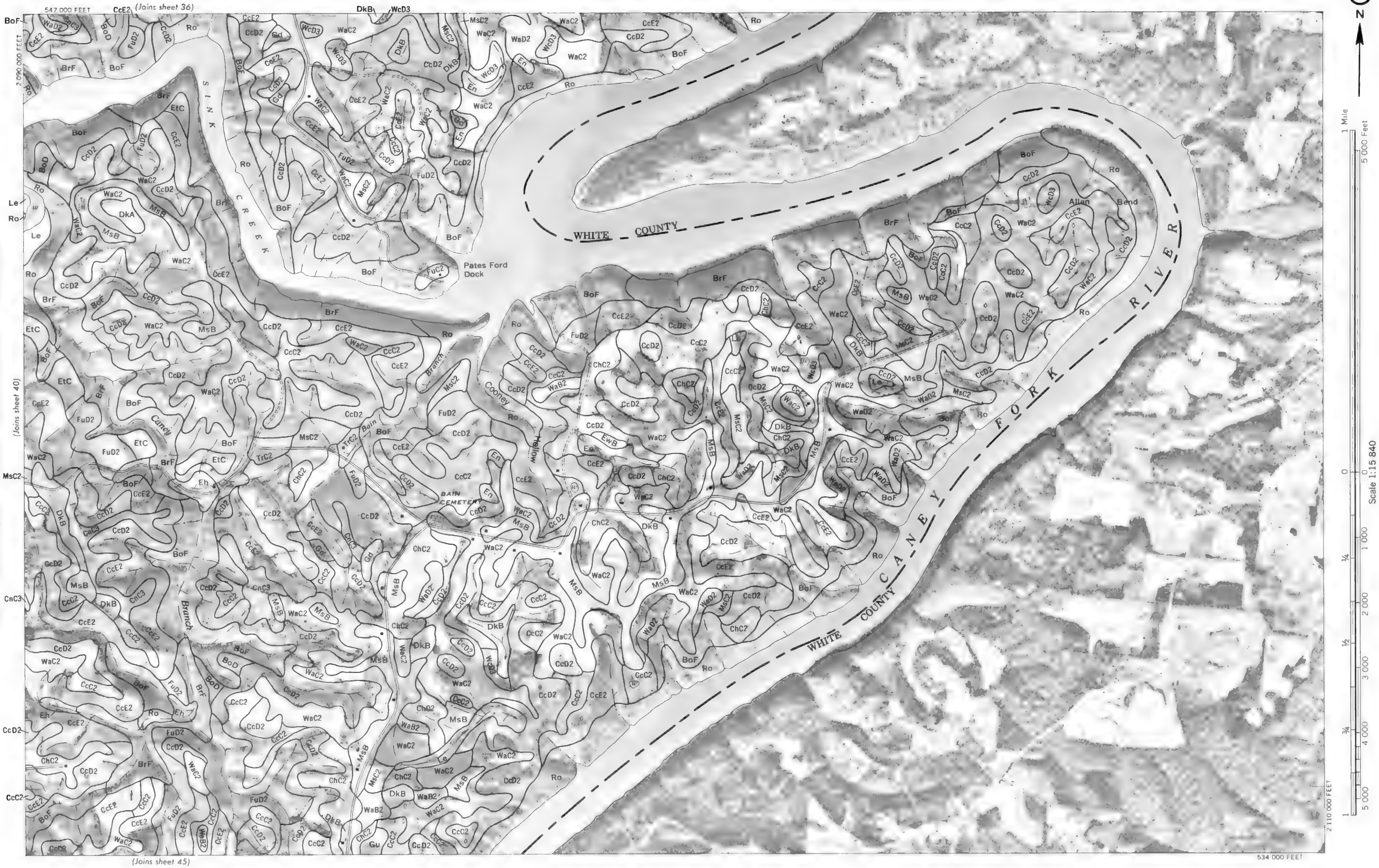
2 090 000 FEET

534 000 FEET

DE KALB COUNTY, TENNESSEE NO. 40

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.



DE KALB COUNTY, TENNESSEE NO. 41

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 42

42

N

534 000 FEET

(Joins sheet 38)

2 030 000 FEET

521 000 FEET

2 050 000 FEET

(Joins sheet 43)

1 Mile

5 000 Feet

Scale 1:15 840

1 5 000 ¾ 4 000 ½ 3 000 ¼ 2 000 0 1 000 0

DE KALB COUNTY, TENNESSEE NO. 42

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 43

43

N

534 000 FEET

2 050 000 FEET

(Joins sheet 42)

(Joins sheet 39)

(Joins sheet 44)

WARREN COUNTY

Sink Creek

Warren Branch

Quantu Branch

Clear Springs

2 070 000 FEET

521 000 FEET

1 Mile

5 000 Feet

Scale 1:15 840

DE KALB COUNTY, TENNESSEE NO. 43

This map is one of a set compiled in 1971 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Tennessee Agricultural Experiment Station.

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system, 1927 North American datum.

DE KALB COUNTY, TENNESSEE — SHEET NUMBER 44

(44)

N

534 000 FEET

2 070 000 FEET

(Joins sheet 40)

(Joins sheet 43)

(Joins sheet 45)

2 090 000 FEET

521 000 FEET

Antioch

Caney Branch

Belk

Corinth Church

WARREN COUNTY

1 Mile

5 000 Feet

Scale 1:15 840

1 0 1 000 2 000 3 000 4 000 5 000

¾ ½ ¼ 0

DE KALB COUNTY, TENNESSEE NO. 44

Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

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Photobase from 1964 aerial photographs. Grid values based on Tennessee plane coordinate system. 1927 North American datum.

(Joins sheet 41)
(Joins sheet 44)

534 000 FEET
2 090 000 FEET
2 110 000 FEET
521 000 FEET

WHITE COUNTY
WARREN COUNTY
CANEY FORK RIVER
Caney Branch
NEW UNION CEMETERY
WRIGHT CEMETERY
Wright
Blend

N

1 Mile
5 000 Feet

Scale 1:15 840
0 0
¼ 1 000
½ 2 000
¾ 3 000
1 4 000
5 000